CIE NEWS

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CIE Division 1: Vision and Colour

Division 1 "Vision and Colour" is concerned with most fundamental aspects of light and lighting and supplies basic methods to measure, to specify, and to assess light in terms of visual functions. The Division was established in 1983 by combining three former TCs, Vision, Colorimetry, and Visual Performance, each of which now forming one of the three working sections in the Division with an associate director to moderate it.

The section "Vision" covers basic visual functions such as luminous efficiency, colour vision, visual acuity and so on, and establishes response functions and metrics of light being based on those functions.

Photometry is one of the main subjects of this section. A new photometric system based on heterochromatic brightness at any level including the mesopic range is now under development. The current CIE photometric system based on V(λ) function has been widely used for a long time. It has however some shortcomings in assessing lights in terms of apparent brightness of coloured lights or those in the mesopic range. The photometry for brightness is intended to supplement the current CIE system with correct evaluation of brightness at any level. Since the CIE system has been used as long as 75 years without any major modification, the system based on brightness, when it is completed, will be addressed as a large step in the long history of the CIE photometry. This year of 1999 is the 75th anniversary of CIE photometry. The CIE symposium on photometry is to be held on September 30 to October 2, 1999 in Budapest to celebrate and to consider the future of photometry (see also page 6).

Another main item that Vision section is now investigating is the establishment of cone fundamentals and a chromaticity diagram based on them. This is needed for a more accurate colorimetric system and for scientific studies on human colour vision as well. It has an educational purpose also in teaching colour vision and colorimetry as it is easily understood how much three types of cones are activated in a new type of chromaticity diagram. This work has been conducted for rather a long time. After extensive investigations and discussions it is almost coming to a final conclusion.

IN THIS ISSUE

The second section "Colour" is the largest and most active in Division 1. It covers all aspects of colorimetry, such as colour specification, illuminants for colorimetry, colour order systems, colour differences, colour rendering, colour appearance, and so on. It has produced by now a lot of useful colorimetric standards and technical reports, which are now widely used in almost all the fields relating to colour.

Industrial needs strongly influence the activity of this colour section. Works on colour difference formula, colour rendering index and daylight simulators have been done very actively since 1970s being stimulated by interests of industry, and investigations toward a better method for formulation still continue. As the evaluation of colour difference largely depends on viewing conditions, affecting factors on colour differences in practical conditions are currently under investigation.

Perceptual and cognitive aspects of colorimetry are gaining importance in the colour section, such as chromatic adaptation, colour appearance and their vision modeling. One noteworthy development in recent years is the establishment of CIECAM97s, which is a simple version of the colour appearance model for use in application fields particularly in colour imaging. Vision modeling for colour appearance has been studied for long in Division 1 and is still progressing for an excellent model in a scientific meaning. The CIECAM97s is a result of successful summarizing those excellent studies carried out so far in order to meet the needs in the colour imaging field.

Image technology that is now established as a new Division of the CIE is very close to this colour section. Some topics related to colour imaging such as comparison of colour appearance between hard-copy and soft-copy images are investigated also in Division 1. It was generally agreed at the establishment of the new Division that Division 1 covers fundamental aspects of colorimetry and Division 8 is more application-oriented. As the clear separation between the two is actually difficult, it is strongly needed for both Divisions to keep close liaison with each other to exchange information and to work cooperatively to avoid duplicity. The latest Division 1 meeting in Baltimore in 1998 was successfully held in conjunction with the Division 8 preliminary meeting.

The third section is called "Visual Ergonomics". Metric of visual performance and its application to lighting are main objectives of this section. Visibility, visual field, glare, conspicuity, visual attention and cognition are to be investigated in this section.

These visual functions are vitally important in practical situations and metrics of those functions are much needed for efficient lighting for traffic and work areas in particular. There is, however, no standard established yet, for visual field size, for conspicuity area, for visibility of flashing lights and moving objects, and so on.

Despite its importance, this section has unfortunately been getting less active in recent years in Division 1, and the number of TCs and Reporters decreases. This is because of the lack of investigators who are involved in CIE and can bridge basic visual science and application fields. Considering this situation seriously, it was decided at the latest Division meeting that this section should be merged into the Vision section for reconstructing. As the Vision section has recently become more application-oriented, the combination of the two section was considered as an appropriate step for further developments for both sections. For example, investigation of visual performance in the mesopic range is getting more attention in lighting for traffic at night. A good cooperative work between the fields of photometry and visual performance is expected to accomplish the investigation.

Finally it should be mentioned that Division 1 is aware of the importance of the establishment of standard visual responses of elder people for better lighting for the elderly. At the CIE 24th Session in Warsaw, Division 1 is planning to hold a workshop entitled "Aging effects on Vision" to consider how our visual functions change with aging and how the lighting technology take accounts of the changes to provide an appropriate lighting for elder people.

The work of Division 1 is always based on deep scientific research and supported by basic scientists on vision and colour. This reflects in keeping a good quality of standards and technical reports. CIE is now establishing a system of study groups with an intention to attract basic scientists to CIE work. Division 1 will benefit from this system by getting active scientists to be involved in Division 1 activities.

Ken Sagawa
Director of CIE Division 1

News from the Divisions

The following items have been summarized from full Activity Reports and Meeting Minutes received at the Central Bureau. Readers requiring more information are kindly requested to contact their National Division Representative through their National Committee

Division 1 – Vision and Colour

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

The following new TCs have been established:

TC 1-51: Visual Acuity (Chair: H.J. Schmidt-Clausen, Germany)

Terms of Reference: To write a technical report and provide, on the basis of data collected from the literature, standard functions on visual acuity defined by the Landolt-ring as a function of luminance, contrast, presentation time, age, colour.

TC 1-52: Chromatic Adaptation Transform (Chair: R. M. Luo, Great Britain)

Terms of Reference: To review the chromatic adaptation tranforms with a view to make a recommendation.

TC 1-53: A Standard Method of Assessing the Quality of Daylight Simulators (Chair: C. S: McCamy, USA)

Terms of Reference: To prepare a CIE standard for the assessment of daylight simulators.

Division 4 – Lighting and Signalling for Transport

http://www.cie.co.at/cie/

The following new TC has been established:

TC 4-41: Crime and Road Lighting (Chair: K. Painter, Great Britain)

Terms of Reference: To prepare a technical report on the role of lighting in the prevention of crime and provide advice, using existing CIE reports as appropriate, on the kinds of lighting that can be used to reduce the incidence of crime.

Division 4 has also established a new reportership:

300 mm Traffic Lights (Reporter: Dick Schwab, USA)

Division 5 – Exterior and Other Lighting Applications

http://www.cie.co.at/cie/

The following new reportership has been established:

Emergency Lighting (Reporter: B. Weis, Germany)

CIE Study Group Lighting Mailing List

We are pleased to announce the establishment of a mailing list in the CIE net.

This is regarded as a first step for the formation of Study Groups which will review current scientific developments for a number of specific fields related to CIE Divisions and make proposals of new work items for TCs and Reporters in the Divisions. This will be realized through exchanging up-dated research information among the group members, holding forums, regular or temporal, and having extensive discussions on open questions.

This mailing list should draw the attention of scientists and engineers on this new CIE project and form a basic structure for the Study Groups.

Two major Study Groups, dealing with fundamental and applied subjects, are considered:

A) Vision, colour, actinic effects and their measurements, including sources and optoelectronic transducers,

B) Applied indoor and outdoor lighting and transport including signalling and signing.

The purpose of the Lighting Study Group is to set up a forum of discussion for open questions of light and lighting. Thus the descriptions of new theoretical and practical results are most welcome.

The lsg mailing list is open to everybody interested in the science and techniques of light and lighting. You are invited to join this moderated mailing list.

To subscribe to the mailing list, please

- send an e-mail to: lsg-request@knt.vein.hu with the word "subscribe" (without quotation marks) in the SUBJECT line.
- You will get a reply e-mail. If this has been received just hit the reply button.
- You will get a further confirmation e-mail, only after this second automatic confirmation are you a member of the Lighting Study Group.
- As a next step you can send messages to the Study Group moderator: Send your e-mail to: lsg@knt.vein.hu

In this message you can send any information you wish to send to the Study Group.

We hope that this new possibility to share information will help your research activity too.

New Publications in the Field of Light and Lighting

Arch C. Luther published two books on audio and video technology in 1997 and 1998 that might be of interest to CIE readers who would like to get better insight in subjects dealt with in CIE Division 8.

Principles of Digital Audio and Video

Luther Arch C.

Artech House, Inc., Boston & London, 1997
ISBN 0-89006-892-5

The book discusses the modern methods of digital audio and video recording, transmission and display. The book provides a non-mathematical introduction into the world of digital communications. A First Chapter provides an introduction into the digital fundamentals, compares analogue and digital systems and basic architectures.

The subject of Chapter 2 is probably most familiar to the CIE reader: Video fundamentals, where questions of human vision, colour representation, analogue and digital video systems are discussed. This is also the chapter where a CIE reviewer can find most easily items where he disagrees with the author. Thus e.g. on p. 27 the book says "…may be different from the physical quantities of brightness and colour." Brightness is certainly not a physical quantity.

But one finds also in other chapters items of minor importance where a CIE reviewer could have helped to improve the book, if he or she would have seen the manuscript at an earlier stage. Thus, e.g. on p. 126 candela is still introduced as based on black-body radiation.

Also in camera colorimetry one would like to see more precise statements: On p. 135 the book states "… camera primaries could be of any form, and masking could be applied to convert the standard primaries at the output." Naturally just for cameras that are used to capture a wide variety of scene colours, this is not appropriate, matrixing can not help to reproduce metamers correctly if the camera fundamentals are not linear combinations of the CIE primaries.

Despite of such minor misconcepts the book provides a very readable introduction to further chapters on audio fundamentals, audio and video systems, analogue-to-digital conversion techniques, architectures of video cameras, digital transmission, signal processing and data compression.

The chapter on video displays is again one where the reviewer was more familiar and found some definitions a little bit sketchy.

The final chapters of the book deal with items like digital recording, postproduction systems, digital multimedia and an outlook to the future of a digital world.

The reviewer found the book an entertaining first introduction to the subject and would like to recommend it to the CIE readership who would like to get a first insight into digital audio and video systems.

Video Camera Technology

Luther Arch C.

Artech House, Inc., Boston & London, 1998
ISBN 0-89006-556-X

This is another book by the above author in the series "Digital audio and video series" of the publisher. Much the same can be said on this book as on the previous. It is written in an easily readable style, discusses the subject without going into mathematical details.

Again it would have been of advantage if somebody knowing light and lighting well would have read the manuscript. Then probably such annoying statements, as "Colors are perceived because, in addition to its gray scale sensors (rods), the human eye …" (p. 5), or "illuminant intensity" described by lux, or again the black-body definition of the candela (p. 26) would not appear in the book. Definitions like "Photovoltaics – … An electric voltage is generated proportional to the illumination on the surface of the cell …" is probably not a definition a photometrist would be very happy with.

Despite of these light and lighting inaccuracies, the author provides an excellent short (less than 300 pages) overview of his subject. Chapters, such as the short introduction into video cameras, the underlying human vision, camera input optics, the image sensor will give a first introduction with some very well prepared drawings that make the subject easily understandable.

The major part of the book deals with the camera, its use in a system, where the author discusses also very often neglected questions like camera cable requirements.

Modern camcorders and their components, like viewfinders are also discussed, together with items like camera packaging, specifications and measurements. Still picture cameras and modern HDTV systems find also their introduction.

The book closes with an outlook into future technologies. It is certainly a book where an illuminating engineer can find answers to many of

his questions he would like to put to Division 8 experts.

Communication and Computing for Distributed Multimedia Systems

Lu Guojun

Artech House, Inc., Boston & London, 1997
ISBN 0-89006-884-4

The third book in this series the CIE Cental Bureau received for reviewing. It is amazing how the author could cope with the demand, probably set by the publisher, to discuss his subject with as little mathematics as possible. Even in this book of "computing", as stated in the title, you hardly find any mathematical descriptions.

The author intends to provide an overview of multimedia computing and communications for the senior university student, and therefore it is written as a textbook. The 11 main chapters deal with subjects such as what is multimedia computing and communications, the basic building blocks of multimedia data, digital audio, video systems, audio and video compression principles and techniques. The reader will get a short, but understandable introduction to different coding algorithms and will learn about MPEG and JPEG compression standards.

Further chapters deal with network support for multimedia communications, different transfer modes, transport protocols, multimedia systems and servers, problems of networked multimedia synchronisation, information indexing and retrieval, just to mention a few.

The final chapter discusses items like World Wide Web, videoconferencing systems, problems of the information superhighway.

The book is well written, and not only students who would like to specialise in the subject will benefit from its content, but also professionals who would like to get an overview of the subject can read the book with advantage.

Reliable Spectroradiometry

Kostkowski Henry J.

Spectroradiometry Consulting
P.O.Box: 2747 La Plata, MD 20646, USA
ISBN: 0-9657713-0-X

The referee's attention was drawn to this publication by a book review, stating this volume to be a treasure-house. And really, for a spectroradiometrist this book deserves this attribute and moreover it deserves the appreciation of any expert and beginner carrying out spectral measurements in the wavelength range from 0,2 μm to 3 μm.

In the first part the theoretical basics of spectral measurements with a monochromator is detailed. It starts with the every day laboratory techniques of spectroradiometry then gradually penetrates into deeper and deeper levels. Thorough mathematical handling of the problem is provided in the frame of measurement equations. The simple equation of the ideal situation is extended step-by-step by newer and newer factors influencing the measurement uncertainty. These factors, to mention only the most important ones, include non-linearity, directional and positional effects, spectral scattering, spectral distortion and size-of-source effect. Simultaneously, methods are described to avoid these uncertainties or ways are given to minimize their influence.

The second part details the hardware, i.e. the instruments, standards and detectors. The description of spectroradiometers is limited to scanning monochromator based systems with a short excursion to multichannel detection. A great variety of standard sources and detectors including the most up-to-date ones are discussed. The range commences with the UV source of synchrotron radiation and photomultiplier tubes, continues with different types of lamps and semiconductor detectors and concludes with black bodies. The primary standard high accuracy cryogenic radiometer and transfer standard trap detectors are obviously included, too. This part is finished by the discussion of automation and data evaluation techniques.

The last part is a collection of the authors systemized wide ranging experience gathered through many decades at the Radiometric Physics Division (or at its predecessor) of NIST, formerly NBS. It is dedicated to practical processes like instrument assembly and characterization, measurement plan and uncertainty analyses of measurement results.

The appendix contains useful information on technical data concerning spectroradiometry among others spectral lines, vendors, mathematical basics, etc.

The book is a whole entity, it can be used as a textbook for beginners or as a handbook for experts, therefor it is suggested to be read by scientists and engineers, by experts and beginners. The small inconvenience that the figures are collected at the end of each chapter is abundantly compensated by the content of over 600 pages.

Road Lighting for Safety

Schreuder D. A.

Thomas Telford,1998
ISBN 0 7277 2616 1

Your referee took this book into his hands most enthusiastically as the title already indicated a subject most relevant nowadays, and because the author is a well-known expert of the field.

There are many books dealing with lighting applications and the number of papers dealing with road safety issues increases, but there are very few publications dealing with the transport lighting problems specifically from the viewpoint of road safety.

The author stresses in the Preface of his book that the volume contains subjects he discussed in the past in individual papers and reports. It is certainly for the benefit of the road lighting engineer that he can find now all these in a single book.

Your referee is sorry that he could not read the original version of the book in Dutch due to his inability of reading in this language, as the translation obviously lost some of the flavour of the original. It is a pity that the translator seemed to be a non lighting expert and therefore some the terms used differ from the CIE terminology.

For a lighting expert these discrepancies are of less importance but if a second edition of the book will be considered it would be necessary to correct them. Thus e.g. on p. 26 one reads emitted power in Joules.

There are also some CIE related facts that should be corrected, as e.g. the V(λ) function was determined by the CIE in 1924 and not in 1932 (p.42).

Despite such minor problems the main message of the book, the description how proper road lighting has to be designed also seen from the safety point of view, is highly appreciated and it can only be recommended to exterior and transport lighting engineers to read this book carefully and apply its recommendations in practice.

Meetings Reports

Interlight '98
4th International Trade Fair for Lighting & Light Technology

14-17 December 1998, Moscow, Russia

In spite of the difficult economic situation in Russia more than 170 exhibitors from 20 countries presented their products. With more than 60 exhibitors the Russian Federation was the largest participant. The largest participation from abroad came from Germany (46 exhibitors) and Italy (30 exhibitors). A broad range of lamps and light technology for the design of interiors as well as for the exterior was presented to the interested trade visitors. In future, special importance will be attached to energy saving products; Russia has passed an energy saving program especially for the saving of energy in the municipal housing economy.

The 5th International Trade Fair for Lighting and Light Technology "Interlight '99" will be organized from December 13 to 16, 1999, in Moscow. Information can be obtained from:

OWP Ost-West-Partner GmbH
P.O.Box 2127
D-92611 Weiden, Germany
tel.: +49 961 389770
fax: +49 961 32035
e-mail: OWP-Weiden@t-online.de

Future Meetings

Update on CIE Session 1999
Warsaw, Poland

The website for the CIE Warsaw Session has been updated recently (http://www.ee.pw.edu.pl/cie99/). The details of the Session program, social programs and accomodation including the final registration form have been posted to interested parties. In case you have not yet received your invitation by mail, please check with your National Committee or take a look at this website and download the registration form from there !

Second Circular and Call for Papers

CIE SYMPOSIUM '99
75 years of CIE photometry

Photometry of the past and what is expected for the next millennium

30 September - 02 October 1999
Hungarian Academy of Sciences, Budapest

The present photometric system was adopted 75 years ago by the CIE at its Session in Geneva.

The CIE Symposium '99 will commemorate this anniversary in Budapest, Hungary, between 30 September – 2 October, 1999.

Main emphasis will be laid not on the past 75 years but on what we can learn from this period, and

what should be done to develop photometry into a system that can serve lighting engineering well for the next 75 years.

Introductory Paper

The Introductory Paper will be read by *Dr. Franz Hengstberger* Director of CIE Division 2 "Physical measurement of light and radiation" (1991-1999) and current Vice President Publication.

Invited Papers

Invited Papers are intended to review the system of photometry, put it in proper perspective from the point of view of modern vision knowledge and legal metrology, discuss its merits and shortcomings as seen by lamp manufacturers, the indoor and outdoor lighting practitioners.

The following Invited Papers have been scheduled:

- *Vision research*
  Prof. Arne Valberg (Norway) CIE photometry and vision research (pending)
- *Physical photometry*
  Dr. Bill Blevin (Australia), The base unit of photometry and the Metre Convention
- *Lamp photometry*
  Dr. Terry McGowan (USA), Lamp Photometry - Quest for Solutions
- *Applied photometry*
  Prof. Mark S. Rea (USA), Photometry for lighting applications: Should it be more than V(λ)?
- *Quality lighting*
  Dr. Jennifer Veitch (Canada), Can quality criteria be incorporated in CIE photometry? (tentative title)

Closing Paper

Dr. Ken Sagawa (NIBH, Japan), The future of CIE photometry - Toward a system more visually meaningful

Who should attend

This meeting is open to all participants. To ensure adequate space and support, and to allow distribution and adequate review of relevant documents, prior registration is required.

The papers to be read will be of benefit for scientists and engineers working in basic and applied fields of illuminating engineering, photometry and colorimetry. It will help to understand the limits of the current photometric system and show possible development directions.

Contributed Papers and Poster Presentations

You are cordially invited to submit a two page extended abstract of your proposed contribution in English **no later than 30 April 1999** 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).

The *International Advisory Board* will review and select the papers for the meeting.

Authors will be notified of acceptance of their abstract before 1 June 1999. Instructions for preparing camera-ready copy of papers will be forwarded to accepted authors. Final camera-ready copy is due at the Symposium.

International Advisory Board

Dr. J. Horváth (Hungary)
Dr. R. Köhler (BIPM, France & Germany)
Mr. H-A Löfberg (Sweden)
Mr. J. Moore (United Kingdom) pending
Dr. J. Schanda (Hungary)
Prof. Dr. H. Terstiege (Germany)
Dr. F. Viénot (France)
Dr. P. Walraven (the Netherlands)

Registration

Registration fee: US$ 200,-. For registration please contact:

CIE Central Bureau
Kegelgasse 27
A-1030 Vienna / Austria

Registration via the web at

http://cie.kee.hu/symp99

is also possible. Deadline for registration is 15 June 1999.

Registration fee includes attendance at all sessions, Abstract Booklet, coffee-breaks and Get Together Party participation.

Meeting schedule

The meeting will take place at the Central Building of the Hungarian Academy of Sciences, Roosevelt tér 9, 1051 Budapest.

The Symposium will start on 30 September at 14:00 hours with the Introductory Paper, followed by Invited and Contributed Papers.

On 30 September in the evening a get together party will be hosted by the Hungarian National Committee of the CIE, co-sponsored by the Hungarian lighting industry.

Further Invited and Contributed Papers will be read on 1 and 2 October, with ample time for visiting the Poster Presentations and Round Table Discussions. On 1 October in the evening there will be a conference dinner. Details and costs will be announced later. The Symposium will close on 2 October at lunch time.

For attendees who would like to extend their stay in Budapest for the week-end an optional excursion programme will be offered.

Please visit the URL:

www.hungary1.com/lodging.html

to find the lodging of your choice.

Programme, Abstracts and Proceedings

The Abstracts of the Invited Papers are available at http://cie.kee.hu/symp99. As soon as the International Advisory Board finalises the meeting programme and selects the Contributed Papers and Poster Presentations, the Programme and the Abstracts of all contributions will also be placed onto above WEB site.

Printed Programme and Abstract Booklet will be available for participants at the Symposium.

The Symposium Proceedings will be printed after the meeting. It is intended that it should contain the full texts of all Invited and Contributed Papers, as well as Poster Presentations delivered by the authors at the meeting, together with short summaries of the Round Tables and the discussions. A CD-ROM version is also envisioned.

Other meetings of interest

May we draw your attention to two further meetings that might be of interest to you and that are adjusted timewise to the Symposium:

17th Coloristic Symposium

The Coloristic Department of the Hungarian Chemical Society, in conjunction with the Hungarian National Committees of the CIE and of the AIC is organising the 17th Coloristic Symposium with international participation at Tata, near Budapest between 27 and 29 September 1999.

This symposium is the biannual meeting place of Hungarian scientists and engineers showing their latest results in the field of colourimetry. The language is Hungarian and English with simultaneous translation.

BalkanLight

The Bulgarian Lighting Society organises an illuminating engineering meeting in Varna, Bulgaria, on 6-8 Oct. 1999. For further details contact denima@omega.bg.

IAU-UN Special Environmental Symposium

IAU Symposium No. 196
Preserving the Astronomical Sky

12-16 July 1999, Vienna, Austria

This IAU approved symposium is sponsored by the International Astronomical Union and is organized by Commission 50 (Protection of Existing and Potential Observatory Sites), with the support of Commissions 9 (Instrumentation), 21 (Light of the Night Sky), 25 (Photometry), 40 (Radio Astronomy), 46 (Education) and 51 (Bioastronomy: Search for Extraterrestrial Life).

International Co-sponsors: UN Office for Outer Space Affairs, International Commission on Illumination (CIE), URSI, IAF, ICSU, COSPAR, UNESCO, IUCAF, International Dark-Sky Association (IDA), and others.

The meeting will provide a forum for education and discussion of the issues that threaten the viability and efficiency of astronomical observations: light pollution, interference at radio frequencies, and space debris, and other potentially disturbing future activities in space (space advertising, space power generators, etc.). In addition to astronomers, the program will allow time, poster space and display space for the viewpoints of a wide variety of other professionels and interests, e.g. lighting engineers and designers, spectrum managers, radio communication firms, space agencies, etc. The emphasis will be on recommendations for specific remedial action. These recommendations will be presented to the IAU Executive Committee, but also to the UNISPACE III conference, the International Telecommunications Union (ITU), the major space agencies, and other appropriate national and international bodies.

The program will include sessions on: light pollution, radio interference, and space debris.

Deadline for abstract: 30 May 1999.

For further information, please contact:

IAU 196, IDA Inc.
3225 N First Avenue
Tucson, AZ 85719, USA
e-mail: ida@darksky.org
http://www.darksky.org/ida/iau196.html

International Workshop on UV Exposure, Measurement and Protection

18-20 October 1999, Chilton, UK

This workshop will be hosted by the National Radiological Protection Board (NRPB), the World

Health Organization (WHO) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Its aims are: to provide a better understanding of the science relating to human UV exposure and the environmental, behavioural and social factors relating to such exposure; to review existing measurement techniques for assessing exposure and their associated uncertainties; to examine the adequacy of existing protection methods and public perception initiatives in reducing overall exposure; to set clear objectives and policy for future requirements in this area.

The workshop is primarily intended for the specialist in a relevant field of UV exposure, measurement and protection, but much of its content will be accessible to laypersons.

See also the announcement on the internet at http://www.nrpb.org.uk/WHO-uv.htm

PRAKASH '99

3rd International Exhibition on Light and Lighting Technology

29 October - 3 November 1999, New Delhi, India

This exhibition will provide an excellent platform for business promotion for the technologists, manufacturers and designers engaged in the field of lighting and allied products. The fair will also highlight the advances made by the Indian lighting industry over the years.

The exhibition will cover the following topics: lighting sources, home lighting, decorative and architectural lighting, lighting for industrial applications, street lighting, floodlighting, electrical accessories, energy saving light, light dimming systems, non-conventional energy sources relating to lighting, raw material for the lighting industry, test and material instruments, etc.

For further information, please contact:

India Trade Promotion Organisation
Pragati Bhawan, Pragati Maidan
New Delhi-110001, India
fax: +91 11 3319754, or 3317896
e-mail: itpo@giasdl01.vsnl.net.in

7th Colour Imaging Conference

Color Science, Color Engineering, Systems and Applications: Putting It All Together

16-19 November 1999, Scottsdale, Arizona, USA

The Colour Imaging Conference is the premier technical conference for scientists and engineers working in the area of colour science, colour engineering and their application to colour products and colour imaging technology. The range of professional disciplines represented includes: digital photography, colour science, colour engineering, image processing, colour reproduction, prepress, display design, computer simulation, data visualization in colour, psychophysics, optical physics, virtual reality, systems engineering, software applications development, and hardware development. It is the broad mix of professional interests that is the hallmark of this conference. The conference program is designed to promote interaction among the participants.

As in the past, this year's conference will feature a comprehensive series of tutorials on both basic and advanced topics in colour science, measurement, imaging, technology, image processing.

For further information, please contact:

IS&T
7003 Kilworth Lane
Springfield, VA 22151, USA
tel.: (+1) 703 642 9090
fax: (+1) 703 642 9094
e-mail: info@imaging.org

International Symposium on

Photonics and Applications (ISPA'99)

29 November - 3 December 1999, Singapore

Abstract due date: 19 April 1999

Conference topics include:

- design, fabrication and characterization of photonic devices
- advanced photonic sensors and applications
- photonics systems and applications in defense and manufacturing
- photonics technology into the 21st century

For detailed information about the meeting, go to

http://www.spie.org/info/ispa/

Liaison Matters

IEC has sent us the following documents:

34A/854/CDV
Draft amendment 13 to IEC 60357: Tungsten halogen lamps (non-vehicle)
(parallel IEC CDV/CENELEC enquiry)
Deadline for vote: 1999-04-30.

34A/856/CDV
Draft amendment to IEC 60969: Self ballasted lamps for general lighting services - Performance requirements
(parallel IEC CDV/CENELEC enquiry)
Deadline for vote: 1999-07-15.

34A/861/FDIS
Amendment 3 to IEC 60630: Maximum lamp outlines for incandescent lamps
(parallel voting IEC/CENELEC)
Deadline for vote: 1999-04-15.

34D/516/CDV
Draft amendment 1 to IEC 60598-2-23: 1996: Luminaires - Part 2-23: Particular requirements - Extra low voltage lighting systems for filament lamps
(parallel IEC CDV/CENELEC enquiry)
Deadline for vote: 1999-06-30.

34D/517/CDV
Draft amendment 2 to IEC 60570: 1995: Electrical supply track systems for luminaires
(parallel IEC/CDV/CENELEC enquiry)
Deadline for vote: 1999-06-30.

34D/519/CD
Draft amendment 2 to IEC 60598-2-20, 1996: Luminaires - Part 2: Particular requirements - Section 20: Lighting chains
Deadline for comments: 1999-05-17.

76/189/NP
Proposal of the Secretariat: IEC 60825: Safety of laser products - Part xx: Safety of free air and free space optical communication systems
Deadline for comments and vote: 1999-04-30.

Persons interested in any of the above items are requested to contact their IEC National Committee for further details.

From the Lighting Journals

COLOR Research and Application
Volume 23, Number 6, December 1998

Dorothea Jameson: A memoir
D.H. Krantz

Observation and measurement of the appearance of metallic materials, Part II: micro appearance
C.S. McCamy

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For your Diary

Date	Title of Meeting	Organizer	Place of Meeting
1999			
May 5-7	Inter-Society Colour Council Annual Meeting	ISCC, iscc@compuserve.com	Vancouver, Canada
May 10-13	Lightfair International 1999	AMC Tradeshows fax: (404) 220-2442	San Francisco, CA, USA
May 16-21	SID '99	M.Hareng, fax: +33 160 830 148, P.Drzaic, fax: +1 617 868 8089	
May 26-29	European Symposium on Optical Systems Design and Production	EOS/SPIE, fax:+322 743 1550, bruce@associationhq.com	Berlin, Germany
June 10-11	LTG Fachtagung 1999	LTG, Postfach 148, A-2340 Mödling, fax: +44 2236 426 51	Schladming, Austria
June 21-23	PHOTONICS '99	Prof.P.Tomanek, tomanek@dphys.fee.vutbr.cz	Prague, Czech Republic
June 22-23	AIC 1999 Midterm Meeting	Central Office of Measures fax: +4822 620 83 78	Warsaw, Poland
June 24-30	CIE Session 1999	Session Secretariat: fax: +4822 660 5616 CIE99@ee.pw.edu.pl	Warszawa, Poland
June 28	CIE Division 5 Meeting	CIE Division 5	Warszawa, Poland
June 28	CIE Division 6 Meeting	CIE Division 6	Warszawa, Poland
June 28	CIE Division 8 Meeting	CIE Division 8	Warszawa, Poland
June 28-29	CIE Division 1 Meeting	CIE Division 1	Warszawa, Poland
June 28-29	CIE Division 3 Meeting	CIE Division 3	Warszawa, Poland
June 29-30	CIE Division 4 Meeting	CIE Division 4	Warszawa, Poland
June 30	CIE Division 2 Meeting	CIE Division 2	Warszawa, Poland
June 30	CIE Division 7 Meeting	CIE Division 7	Warszawa, Poland
June 28 -July 3	World Electrotechnical Congress WELC'99	AES,Krasnokazarmennaya Str.14,Moscow 111250, fax 095 2870891	Moscow, Russia
July 12-16	IAU Symposium No.196: Preserving the Astronomical Sky	IAU, IDA Inc.,3225 N First Avenue,Tucson, AZ 85719, ida@darksky.org	Vienna, Austria
July 18-23	Int. Symp. on Optical Science, Engineering and Instrumentation	SPIE	Colorado, Denver, USA
Aug. 2 to 6	ICO XVIII – Optics for the next millenium	ICO, SPIE, POB 10, Bellingham WA 98227-0010, USA	San Francisco, CA, USA
Aug. 9-11	IESNA Annual Conference 1999	IESNA, 120 Wall Str.,17th fl., New York NY 10005-4001, USA	New Orleans, LA, USA
Aug. 23-25	Diffractive Optics (22nd EOSTM)	EOS, Prof.F.Wyrowski wyrowsi@uni-jena.de	Jena, Germany

Date	Title of Meeting	Organizer	Place of Meeting
Sep. 22-25	Physiological Optics (24th EOSTM)	EOS, Dr.H.Kasprzak henkas@rainbow.if.pwr.wroc.pl	Wroclaw, Poland
Sep. 30-Oct. 2	CIE Symposium '99 75 years of CIE Photometry	CIE	Budapest, Hungary
Oct. 3-9	XXIst World Road Congress	PIARC, fax: 33 1 4900 0202, piarc@wanadoo.fr	Kuala Lumpur, Malaysia
Oct. 6-8	Balkan Light-99 1st Balkan Lighting Conference & Exhibition	Balkan Light 99, fax: +3592 654883, e-mail: denima@omega.bg	Varna, Bulgaria
Oct. 18-20	Intern. Workshop on UV Exposure, Measurement and Protection	NRPB, WHO, ICNIRP http://www.nrpb.org.uk/WHO-uv.htm	Oxford, Great Britain
Oct. 18-21	Métrologie 99	MFQ, fax:+33 4 6791 3343, sandrine.gazal@wanadoo.fr	Bordeaux, France
Oct. 25-27	Newrad 99, Int.Conf.on new developments in optical radiometry	A.Corrons, fax:+34 91 4117651, corrons@fresno.csic.es	Madrid, Spain
Oct.29 - Nov.3	PRAKASH'99 3rd Int.Exhibition on Light and Lighting Technology	India Trade Promotion Org., fax:+91 11 3318142/7896	New Delhi, India
Nov. 1-2	Annual Congress: Light for Life	South African NC of CIE fax . +27 12 46 4264	Kimberley, South Africa
Nov. 9-11	Jornada Electrotécnica - National Symposium on Illumination	CEC, Cuba fax: +537 33 7454	La Habana, Cuba
Nov. 16-19	7th Colour Imaging Conference Colour Science, Colour Eng.	IS&T, 7003 Kilworth Lane, Springfield VA 22151, info@imaging.org	Scottsdale, Arizona, USA
Nov.29 - Dec.3	Int.Symp.on Photonics and Applications (ISPA'99)	SPIE	Singapore
Dec. 13-16	Interlight '99 5th Intern.Trade Fair for Light & Light Technology	OWP, POB 2127, D-92611 Weiden, fax:+49 961 32035	Moscow, Russia
2000			
Feb. 20-22	ISCC 2nd Panchromatic Conference - Colour in its Surround	ISCC, iscc@compuserve.com	Hilton Head, S. Carolina, USA
Sep. 20–22	Licht 2000	LiTG, Germany, fax +49 30 26011231	Goslar, Germany

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