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of the **indian society of lighting engineers**

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FROM THE PRESIDENT'S DESK

I wish to express my gratitude to our members for electing me to the Governing Body and also to the Governing Body for electing me to serve as the President of ISLE for the next 4 years. I want to thank you all for your support and trust in me.

With the backing and cooperation of the newly elected team of highly knowledgeable and experienced Governing Body members, I am confident that, ISLE will achieve newer heights.

My predecessor Dr. Avinash Kulkarni has already spelled out certain tasks which have been initiated and need to be taken forward by us. In addition to ensuring the successful execution of these spelled out initiatives, I would like to suggest that our target task list should focus among other things on the following:

Enhancement of the fund base by undertaking various activities, for example, increasing the periodicity of the Directory of the Lighting Industry in India

All State Centres to emulate Indore State Centre and increase the level of activities, thereby rejuvenating the members.

Enhancing the education activity of ISLE for example, the proposal of the Lighting Education Trust (LET) of UK for running their lighting course under ISLE in India in Universities and Institutions.

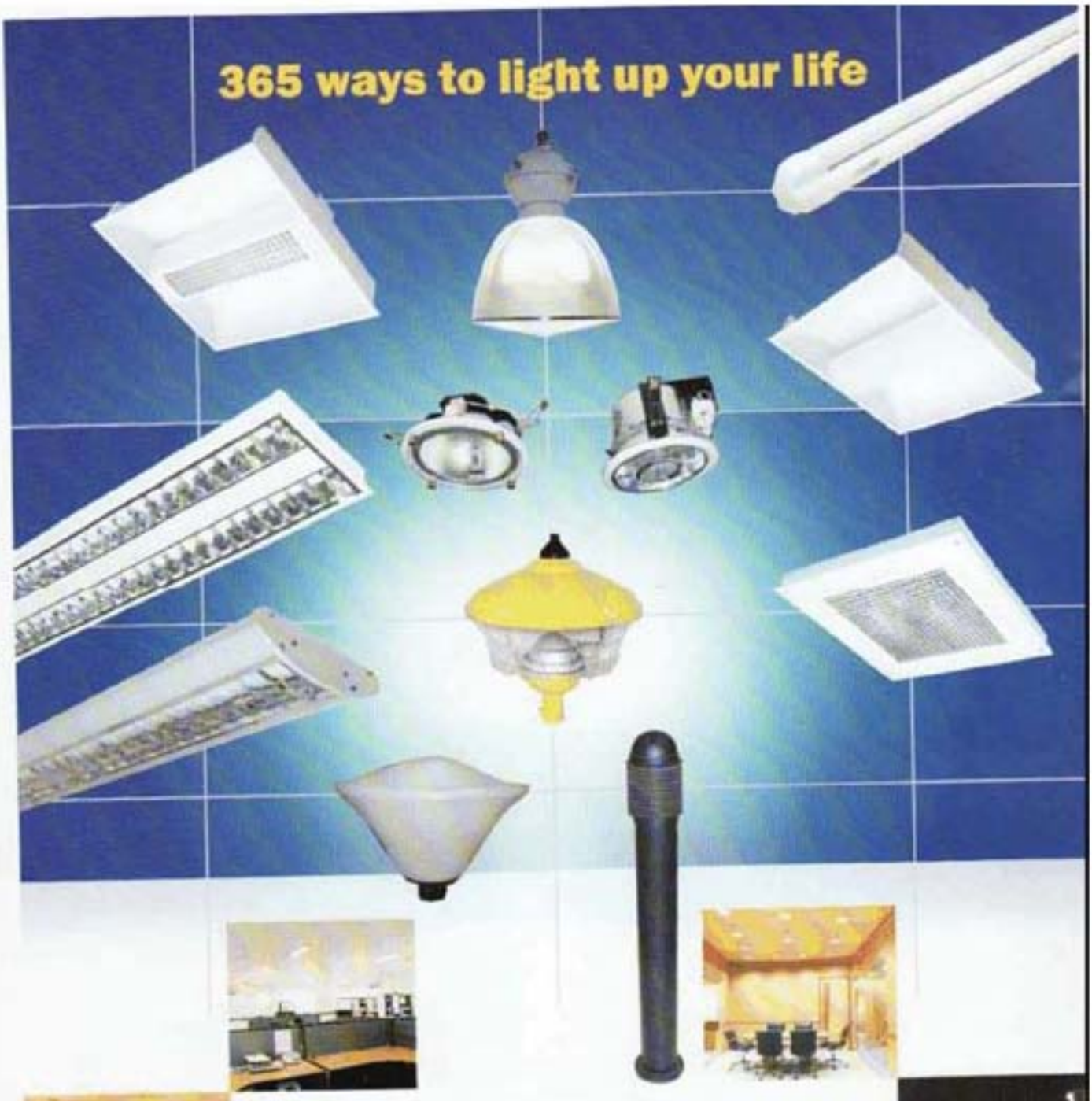
Periodic revision of the bye-laws to keep them in line with the changing needs and defining the role and responsibility matrix of State Centres and the Centre;

Increasing the membership base by roping in leading architects, consultants and other lighting practitioners into our fold.

The opening up of new State Centres at Chandigarh, Hyderabad, etc;

Strengthening our relationship with eminent decision making government authorities viz BEE, BIS, BST, etc.

365 ways to light up your life



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These are some ideas that come to mind immediately. I would appreciate your thoughts, views and suggestions on how we should plan our strategies for the next 4 years so as to make a strong presence of ISLE in the lighting scenario and also to make its functioning more fruitful and meaningful for the lighting fraternity. My email address is given below.

I Look forward to your continued support and co-operation.

Gulshan Aghi
President
gaghi@suryaroshni.com

EDITORIAL

The Bureau of Indian Standards is continuing its series of programmes in collaboration with ISLE to spread awareness and encourage usage of the National Lighting Code. This issue has a report on the programme in Chandigarh.

There are also reports on the technical programmes in the State Centres in Delhi, Karnataka, Rajasthan and of course the monthly lectures held by the M P State Centre.

At the CIE Session in South Africa I attended a very interesting paper presentation by Dr. Teresa Goodman of NPL UK on the Physics of Perception: Measurement of Naturalness. At our request she has sent us a modified version of her paper to share with our members. In future issues we will try and get permission to bring you other papers as well.

There is information on the Introductory Tutorial and Workshop on Mesopic Photometry being conducted by CIE in January next year. You will also find information on the procedure for paper submission to CIE 2012, Lighting Quality and Efficiency being held in Hangzhou, China next year in September.

There is information on 7 new publications released by CIE all of which are available through the CIE website www.cie.co.at and you will notice that ISLE members are now entitled to 66.7% discount up from the 50% available earlier. More members should take advantage of this and upgrade their technical knowledge.

It is now a long time since our members have written in to us and we would greatly appreciate feedback. You can write to us at isledel@vsnl.com.

We look forward to hearing from you.

H.S. Mamak
Editor

ISLE ACTIVITY

25th Annual General Meeting
September 23, 2011, New Delhi

The 25th Annual General Meeting of ISLE was held at Bikaner House in New Delhi on September 23.

Dr. Avinash D. Kulkarni, President ISLE presented his report for the term 2007-2011 outlining the achievements during the tenure of the GB and the suggested goals for the future.

The Annual Report which had been circulated by the Hon. Gen. Secretary was accepted by the AGM.

The Hon. Treasurer presented the Statement of Accounts together with his report. The statement of accounts was accepted by the AGM.

The new Governing Body took over charge in the AGM. As reported earlier the newly elected members are:

Mr. G. Aghi
Mr. P.C. Barjatia
Mr. J.N. Bhavani Prasad
Mr. S. Chakraborty
Mr. B. Dattani
Mr. A.K. Jain
Mr. D. Kumbhat
Ms. S Mukhopahyay
Mr. Rajat Roy

The new GB members elected the following Office Bearers :

Mr. Gulshan Aghi	President
Mr. Dilip Kumbhat	Vice President
Mr. A.K. Jain	Hon. Gen. Secretary
Mr. Bipin Dattani	Hon. Treasurer

DELHI STATE CENTRE

Lecture Programme
September 23, 2011, Delhi

On the occasion of the Governing Body meeting and AGM in Delhi on September 23, Delhi State Centre organised a programme at Bikaner House with two lectures by eminent specialists. The programme was chaired by Mr. N. Nagarajan, Chairman, Delhi State Centre.

The first lecture was by Mr. V.P. Agrawal, Chairman, Airport Authority of India who is also an ISLE member since 2002. Speaking on Airport Lighting, Mr. Agrawal explained that India had the fastest growing aviation sector with 454

airports. He explained the challenges faced in the lighting of airports with examples of obstruction lights, runway and taxiway lighting with the problems of glare avoidance and security issues as well. He showed an example of Delhi airport where because of the high ceilings for the first time floodlights were used in an indoor lighting application.

Mr. Agrawal expressed the interest and involvement of AAI with energy saving and to this end top priority was being given to systems that deliver savings. In this connection he explained that they have started using LEDs in certain airport lighting applications and this will increase as will the use of solar for external lighting. He added that ECBC compliance was essential as well as the GRIHA green building norms.

The second lecture was given by another ISLE member, Dr. Rommel Mehta, faculty member and former HOD of the Department of Landscape Architecture at the School of Planning and Architecture, New Delhi since 1983. He gave a detailed and most interesting talk on the Heritage Lighting of Connaught Place.

Dr. Mehta explained that this project was extremely complicated as there was no precedent and they had only intuitive ideas about how to proceed. The historic heritage lighting in CP was not the lighting of buildings but the lighting of areas including pedestrian precincts. The earlier lighting was essentially road lighting and general area lighting. Following the natural division of CP, each circle was studied for separate treatment. Since no amount of modeling gives the actual situation, the team had to proceed slowly by trying out new ideas taking into account the corridors, shops, parking areas and signage while maintaining the architectural character at night. The problems were compounded by issues such as vandalism and pigeons.

Through slides he illustrated the challenges as well as the approach followed to put into place a lighting proposal that met the specific requirements of this historical location.

The lecture programme was followed by dinner.

Launch of National Lighting Code
September 30, 2011, Chandigarh

ISLE Delhi State Centre in collaboration with the Bureau of Indian Standards organised a seminar in Chandigarh at Hotel Shivalikview to launch the National Lighting Code.

The programme was inaugurated by the Chief Guest, Mr. Alinda Chandra, Additional Driector General BIS. The Keynote address was delivered by Mr. A.K. Jain, ADG, CPWD.

Messrs. N. Nagarajan, A.K. Jain, Alinda Chandra, Renuka Salwan

Mr. N. Nagarajan, Chairman DSC gave the welcome address.

Mr. S. Chakraborty, VP Surya Roshni. gave a presentation on aspects of Indoor Lighting and another one on LEDs.

Mr. Raju Penumasta, Manager, Central Lighting Application Services, Philips India deliberated on the importance of standards in the context of Lighting.

From the BIS Mr. R.K. Trehan gave an outline of the objectives of the NLC programme while Mr. D. Goswami. highlighted the way forward with the NLC codes and practices.

The seminar was attended by about 100 participants from organisations like CPWD, PWD, Chandigarh School of Architecture, Surya Roshni and Bajaj Electricals.

During the seminar 15 new membership applications were received including some life memberships.

Encouraged by the success of the programme in Chandigarh, it is proposed to hold the next seminar in Jaipur in the month of November.

MUMBAI STATE CENTRE

Initiative for New Local Centre

The Mumbai State Centre is working towards the establishment of a Local Centre at Vadodara.

To this end a meeting was held at the Crompton Greaves conference room in Vadodara on September 17, 2011 under the Chairmanship of Mr. P.C. Barjatia, Chairman, Mumbai State Centre.The meeting was attended by 12 persons from Crompton Greaves, Philips and ERDA.

A core team of 6 members was appointed and given the responsibility of enrolling a minimum of 25 members from Vadodara and the surrounding areas by the month of October. The core group consists of Mr. D. Christopher, Mr. Parag Wani and Mr. Prashant Kudrya from Crompton Greaves, Mr. Amal Sengupta and Mr. Jitendra Singh from Philips, and Mr. Nitin Patel from ERDA.

KARNATAKA STATE CENTRE

Seminar on Urban Planning
August 19, 2011, Bengalooru

ISLE KSC organised a seminar on the Necessity of Urban Planning in Growing Cities in collaboration with Jasubhai Media Pvt Ltd, Mumbai. The seminar was sponsored by the International Federation for Highrise Structures, Society for Energy Engineers and Managers and the Fire and Security Association of India.

Swati Dhake from Jasubhai Media welcomed the gathering.

Mr. Swamy being felicitated

Mr. M.S.N. Swamy, Chairman, ISLE Karnataka State Centre addressed the Delegates on the Importance of Lighting and highlighted the need to associate with lighting specialists from the planning stage,

He pointed out that to conserve energy without compromising the quality of lighting it was necessary to select a proper light source suited to the task, select a luminaire depending on the light distribution required, integrate daylight, use proper controls and ensure proper management of the system. He illustrated these concepts with examples from the lighting of museums and artifacts and the lighting of flyovers.

The participants consisting mainly of Town Planners, Architects, Developers and Government officials were very impressed with the proposals and recommendations. This was evident from the Q & A session.

Mr. A. Ravindra, Advisor to the Hon'ble CM Karnataka State, Urban Affairs in his Keynote Address described how the budget estimate was made during the planning stage and how difficult it was to implement.

Prof. Dr. Eng. H.R. Viswanath, President of IFHS, Ar. Hariharan, Architect and Developer, Biodiversity Conservation India Limited, Dr. Srinivasa Murthy, Professor of Psychiatry (retd), The Association for the Mentally Challenged, Ms.Sujaya Rathi AICP, Principal Research Scientist, Center for Study of Science, Technology & Policy, Mr. P. Narsing Rao, Director, Urban Development Research Institute, Mr. Suresh Heblikar, Film Maker, Actor and Environmentalist, Chairman, Eco-Watch, Ar. Vidhyadhar Wodeyar, Architect and Town Planner all spoke on various aspects of planning for a better and healthier growth of a city

Ar. K. Jaisim, Principal Architect, Jaisim-Fountainhead, in his concluding remarks said that without political will no city can grow as planned. It could be seen how the cities were growing in our country and the problems being faced. He added that it was necessary to make politicians understand the importance of this issue to see results.

RAJASTHAN STATE CENTRE

Student Awareness Program on Energy and Lighting
September 9, 2011, Jaipur

The ISLE Student Chapter at the Poornima Group of Colleges (PGC), Jaipur organised a student awareness programme on Energy and Lighting on Friday, 9 September 2011 at the Arbuda Convention Centre, PGC. This programme was sponsored by ISLE, Rajasthan State Centre.

The programme started with the lighting of the lamp by the dignitaries, Dr. S. M. Seth, Mr. Shashikant Singhi, Mr. Vishal Mahendru, Mr. R.S. Saxena, Mr. Tapan Chattopadhyay, Dr. Jyotirmay Mathur, Dr. R.P. Rajoria and Mr. Manoj Gupta.

Mr. Manoj Gupta, Secretary, RSC welcomed the dignitaries and students and emphasised the need for an awareness of lighting and energy issues.

In his presentation on Energy Conservation in Lighting, Dr. Jyotirmay Mathur spoke of the direct implications of tariff increases. He outlined the important points to keep in mind when dealing with lighting such as the effects of inefficient lighting and light pollution. Covering the area of rural electrification and rural


L to R: Messrs. T. Chattopadhyay, R.S. Saxena, Vishal Mahendru, Prashant Vajpayee and Manoj Gupta

illumination, he ended his presentation with a series of action points.

Mr. Tapan Chattopadhyay, General Manager, ISLE gave a presentation on the Society and its activities both past and future. He gave the students information on the international affiliations of ISLE and how it was equipped to help the students update their knowledge. He also gave them information on the lighting courses that are conducted and the scholarships available to students of lighting.

Speaking on New Trends in Lighting, Mr. Vishal Mahendru of Philips gave an insight into what can be done with lighting and explained the elements that make for efficient lighting.

Mr. R.S. Saxena, Chairman, RSC spoke on Energy Efficiency and Energy Conservation. Speaking of the Energy Conservation Act of 2001, he outlined the respective roles of the Central Government, State Government and the BEE. He explained the importance of the star rating and the ECBC. He ended by presenting the PWD initiatives for energy conservation.

Mr. Manoj Gupta, Secretary RSC proposed a vote of thanks.

MP STATE CENTRE

Lecture on Daylighting Techniques
August 28, 2011, Indore

A large and encouraging audience of more than five dozen participants, witnessed an enthralling presentation by Er. Vinay Babar, Chairman IIID, Indore at the 22nd monthly Sunday breakfast meeting of ISLE MPSC. An Architect by profession, he spoke on Daylighting Techniques.

In a spectacular visual extravaganza Er. Babar covered the uses and applications of sunlight, process of fusion of energy, man-made fusion machines from Jt. European Taurus, exclusive reasons for using sunlight, for CRI (Colour Rendering Index), as a design element and as an energy conserver.

He augmented his talk by describing factors governing daylight analysis, orientation and shapes/sizes of windows coupled with G-value of transmission of light through glass; techniques of daylighting through windows, use of light reflectors at International airports etc.

He explained the concept of using light shelves and light tubes sawtooth roof, heliostats used in Cambridge MA, "Smart Glass", PDLC (Polymer Dispersed Liquid Crystal) displays, compatability of natural and artificial light with fibre optic concrete, hybrid solar lighting, to the receptive and appreciative audience.

Er. Vinay Babar with Mr. Akhilesh Jain and Mr. Dinesh Wadhwa

Er. Babar used case studies from Galleria in Milan and Rome, Italy, and the Louvre museum in Paris to highlight the technical details of these excellent daylighting projects.

The presentation elicited a large number of questions.

The program was conducted by Dr. A. Mittal, Director Management, Medicaps Institute of Technology & Management, Indore, and as a standard protocol, commenced with an encouraging welcome speech by chairman Er. Akhilesh Jain and concluded, with a vote of thanks and information by Hon. Sec. Er. Dinesh Wadhwa.

Lecture on Spiritual Lighting
September 25, 2011, Indore

The breakfast meeting on Sunday, 25th September saw the light with the very interesting topic of spiritual lighting. The day was marked by the first lady speaker of the uninterrupted monthly meetings of ISLE MP State Centre.

The speaker, Ar. Ruchira Jain was as impressive as the topic itself. She started with the spiritual aspects of life. Sailing through different religious places like lighting in churches, temples, mosques to emphasise that prayer is the only medium to reach the Supreme Light.

Light through the domes of ancient places of worship like the Ranakpur temple in India, the Pantheon in Athens, the Serapeum in Egypt, Temple Mount in Jerusalem, the

The speaker, Ar. Ruchira Jain (centre)

alabaster window in Orveito Cathedral in Italy, the Nasir al mulk mosque in Shiraz, Iran, were the main highlights of her presentation.

Architect Ruchira Jain looked at Light as an Art and as a Science. Light can act a source of "softening the space" as in the Padmanabhapuram Palace in Kerala, or it could be "symbolic" as in Monde Arab in Paris or Masharabeih, or "metaphysical" as in the Pantheon in Rome. Other aspects of light that drew the attention of the audience were the visual perception of light and the need to study lighting and colour sensation.

CIE ACTIVITY

Registration for Introductory Tutorial and Workshop on Mesopic Photometry

CIE will provide you with the opportunity to get acquainted with the CIE System for Mesopic Photometry and to discuss issues related to its practical implementation. The programme will include lectures by the world's leading experts in mesopic photometry, as well as providing plenty of opportunity to exchange and discuss the latest experimental studies and other associated research relating to mesopic photometry in road and street lighting, mesopic measurement instrumentation, and product specification for mesopic applications. For a programme outline see http://bit.ly/mpoutline.

Venue will be the CIE Central Bureau in Vienna on January 24 and 25, 2012. To register for real-life participation, please, follow this link: http://bit.ly/mpregister and to use the life-streaming facility follow that one: http://bit.ly/mplive. Your registration will be approved as soon as payment has been confirmed.

Price (for real-life and life-streaming):

Tutorial: EUR 550,/Workshop: EUR 150,/Both: 650,

Students: EUR 275,/EUR 75,/EUR 300,

Members of CIE National Committees: EUR 400,/EUR 100,/EUR 450,

(Note that all prices are subject to 20% VAT)

In addition, CIE 191:2010 Recommended System for Mesopic Photometry Based on Visual Performance will be available for participants at CIE membership price (66,7% discount from list price) and a recorded and edited summary version of the meeting will be provided for download.

Note, that places are limited and will be assigned on a first come, first serve basis.

Continued on page 18

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TECHNICAL PAPER

MEASUREMENT OF NATURALNESS: PHYSICS AND PERCEPTION

Teresa Goodman

Abstract

This paper presents the outcomes of an EU project ('Measurement of Naturalness', or MONAT), which aimed to understand how basic sensory information generated by the interaction between human sensory transducers and the physical material or artefact under examination is processed within the relevant neural networks and how this contributes to the cognitive processes associated with the perception of naturalness.

Keywords: Appearance, texture, gloss

1. Introduction

Natural materials are generally perceived as being highly desirable and can command high prices. For example, silk, cashmere, leather, and rosewood all have a history of being associated with quality, craftsmanship and exclusivity - factors that are exploited in markets as diverse as car manufacture, packaging, and textiles. Many natural materials have an inner beauty that is hard to emulate in synthetic products, so by exploring how we decide whether materials are natural, the MONAT project aimed to help manufacturers create artificial materials that are more like 'the real thing', making luxury more affordable and saving precious natural resources.

As consumer demand for natural materials grows, so does the pressure on the Earth's limited natural resources; already many hardwood forest habitats have been destroyed and trade in items such as ivory and fur has brought many animals close to extinction. Never has there been a greater need for improved materials that generate a perception of naturalness. So what are these elusive material properties and attributes, which determine whether people will perceive them as natural? And how do we make decisions based on these cues?

The MONAT project aimed to unravel the perceptual processes underlying these questions and, by studying the complete sensory chain from the properties of the material right through to what happens in the brain, to explore to what extent it is possible to predict whether a surface will be perceived as 'natural' purely on the basis of its visual and tactile physical properties. In essence, therefore, this project acted as a feasibility study to determine whether the results of measurements made in psychophysics, neuroscience and physical metrology can be combined into a scientific model, such that the model will be able to predict typical observer perception in new situations.

'Naturalness' was chosen for study in this project because the perception of whether or not a material is natural typically shows good reproducibility from one observer to another. This means that the identification of the underlying neural processes and the development of appropriate measurement parameters will not be clouded by poor consistency and reproducibility in the neurological and psychological data. This is in contrast to some other perceptual parameters, such as 'beauty' and 'pleasantness', which show more inter-observer variability due to the greater importance of factors such as emotion, personal history and cultural differences. The underlying concepts, techniques and models that will be investigated and developed within the project will be equally applicable to a wide range of other perceptual phenomena, such as 'cleanliness', 'ripeness' or 'quality'.

2. Materials and measurements

One of the first tasks within the project was to create set of test stimulus materials whose appearance and feel spanned the range from completely natural to completely synthetic. The chosen types of material were wood, fabric and granite, selected not only on the basis that these are available in a good range of natural and synthetic variants, but also because of the high degree of familiarity that consumers have with such materials due to their use in products such as furniture, flooring, clothing and building materials. Each of the individual samples within each class of material differed from the others in terms of measurable attributes such as their colour, texture, compressibility, roughness and thermal diffusivity.

All physical properties that were considered by experts to be relevant to the visual or tactile perception were measured using a range of specialist measurement facilities, some of which were developed as part of the project specifically to provide information matched to the sensitivity and discrimination capabilities of the human sensory systems. These included: an automated multiangular imaging facility to capture spatial, spectral (colour) and texture information across the sample area (see below); a system for evaluating the surface friction as perceived by a human finger; a 3D microscope system to measure surface topology and roughness; and facilities for gloss, thermal effusivity and hardness. Leading edge texture analysis and feature extraction algorithms were used to extract the optimum amount of perceptually-relevant information from these measurements.

As well as these physical measurements of visual and tactile properties, each sample was evaluated in terms of its perceived naturalness, using a variety of psychophysical scaling methods. The assessments were carried out using tactile (T) or visual (V) exploration alone, and using vision and touch together (VT). Experiments were also carried

Continued on page 17

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C&S Electric Ltd., the pioneer in the field of lighting solutions, announces the launch of its new one-of-a-kind LED based energy efficient product range "ETERNITY". One of the key advantage of these new LED based products are that they deliver very high lumen output with optimum system efficacy. These elegantly designed LED luminaires reduces the Total Cost of Ownership (TCO) because of their longer life & low energy cost. Thus, C&S LED lighting are not only energy efficient but also amp up the ambience & brings comfort in your life.

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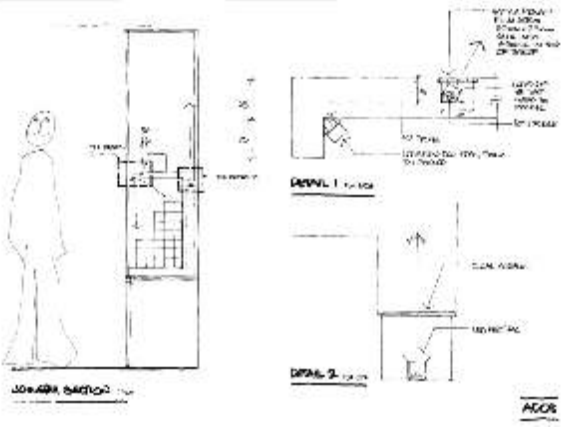
CHA CHA ThÉ, TAIPEI

Cha Cha Thé is a new concept tea store celebrating of the rich history of Chinese tea-drinking culture. Its flagship store, built within an existing space containing unenviable low ceilings and a predominantly white palate, challenged the lighting designers to create a visually interesting and modulated space. This was achieved through careful integration of light sources within the various joinery elements to place light only where it was needed, as any spill light became more than enough for ambient background illumination.

"The miniature, warm, pinhole lighting of Cha Cha Thé evokes antiquity, ceremony, scent and love of the finer things in life," one judge commented of the project. "The design uses the space well, with lighting appropriate to every focal point."

The lighting designers chose a range of both narrow- and wide-beam linear LEDs and medium-beam point source LEDs in warm white. The technique was adapted to suit and differentiate between the different display types, from front-lit gift sets to rear-lit contemporary ceramic tea pots.

Antique items related to the rich history of tea drinking in Chinese culture are accented by 4 and 8 degree AR111 lamps, and the tasting counter and point of sale is identified by a row of carbon filament lamps within amber glass shades to add warmth to the space. All lights are controlled by a central dimmer system with time clock and photocell for automatic preset selection throughout the day to extend lamp life and minimize power consumption.



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MAKHIJA 3378

THE EAST HARLEM SCHOOL, NEW YORK

The East Harlem School operates on limited budget and maximises value derived from every element of program, including lighting. The visually permeable façade moderates daylighting to the building's interior, and at night it expresses the interior life to the street.

"The excitement of this project is in how well the design team composed the overall lighting story, and how efficiently they spent their resources," commented on judge on the project. "The quality of the lighted environment is playful, and shows an inspired and well executed design."

Cost-effective but dramatic suspended fluorescent pendants add character to the space, while contextualizing basic downlights with circular faces. With the exception of a handful of halogens in key locations, the scheme utilizes fluorescents throughout, with a small number of metal halide luminaires. As with all lighting, interior or exterior, the lighting is accessible for maintenance from step ladders or small on-site access equipment.

Another judge called the project "an exceptional example of creative lighting solutions on a tight budget."

LIGHTING DESIGN

PETER L. GLUCK
STACIE WONG
BETHIA LIU
THOMAS PATTERSON, ASSOCIATE IALD
CARLOS HANO
PETER GLUCK AND PARTNERS + LUX POPULI

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ART COLLECTOR'S LOFT, NEW YORK

Designing the lighting for the loft of an avid art collector necessitated a lighting strategy that was both comfortable for a permanent residence and responsive to the presentation of art. The sweeping curvilinear aspect of the architecture, combined with the owner's request to never see a light fixture, provided a challenging task for discreetly embedding the lighting into the architecture.

One judge praised the project as "a fluid and seamless lighting design that completely supports the architectural concept for the space."

Working within the shell of a formerly industrial space, the design team was given the added challenge of making the large central gallery appear to float under a soaring ceiling that was actually just under 9' tall. Two overlapping independently controlled layers of warm and cool dimmable LEDs above the translucent ceiling allow the ceiling lumination to vary in color and intensity throughout the day into evening. Jack-connectors for low-voltage halogen accent lights are located every 30" along curving metal lines that transverse both solid and luminous ceilings. Custom snoots for glare control and accessories were created for the small accents used sparingly to light sculpture.

"Sleek, modern, completely integrated and luminous, the lighting of this project is in perfect harmony with the smooth-edged architecture," another judge stated. "Only after looking at the columns spaced frequently through the space does one recognize that the project could be a remodeled urban loft, and not straight from the set of Sleeper."

The theme of living with art continues into the master bedroom where ceiling pockets conceal shielded low-voltage halogen accent lights. Fluorescent uplights mounted along the transoms at the walk-in closet separating the bedroom from the bathroom provide general lighting for all three spaces. A recessed sliver of low-voltage halogen light provides task lighting at the office, allowing little interruption from the amazing views.

LIGHTING DESIGN
RICHARD RENFRO, IALD
SARAH RANDALL
FABIO TUCHIYA
ANDREW THOMPSON
RENFRO DESIGN GROUP
PHOTOGRAPHY
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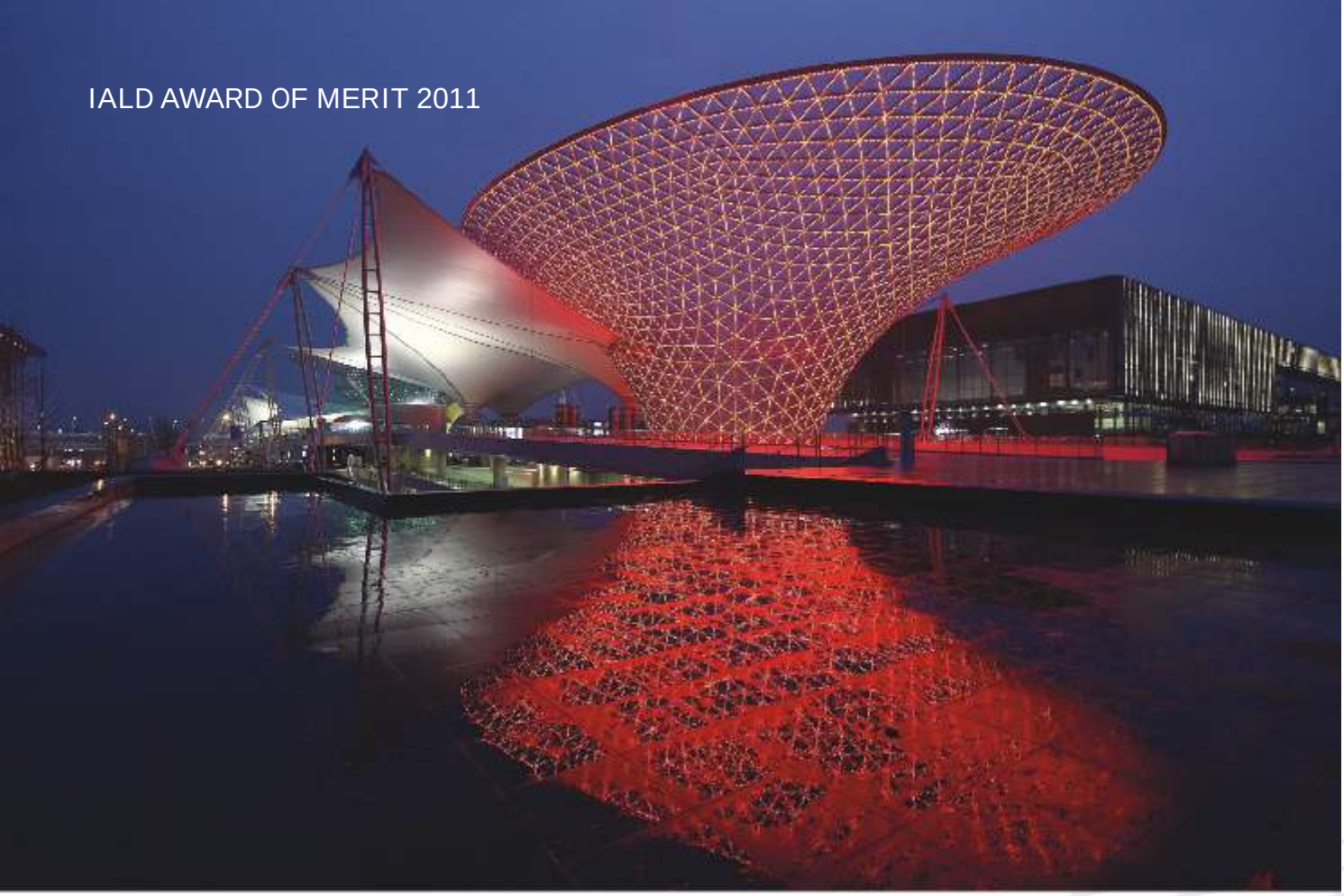
IALD AWARD OF MERIT 2011



EXPO AXIS AT THE WORLD EXPO, SHANGHAI

Welcoming guests to the World Expo Shanghai and serving as the main point of entry, the Expo Axis features the world's largest membrane roof, with a surface of 65,000 m^2. The biggest challenge of this project was combining general and architectural lighting for the 900 meter long membrane roof and the six "Sun-Valleys" (steel structures with glass façades approximately 40 meters tall and 80 meters wide).

"Although we can see this kind of design all around, this specific example shows high quality, intensive care and a creative technological concept of flexibility and beauty," stated one judge. "All of us at the jury table were highly impressed by the standards and quality of this project."

The elegant membrane roof is enhanced by light generated by 1,900 36W LED washers and 1,000 150W HID lights. The synchronization of the lights enables a river-flow lighting effect on the roof. The beauty of the steel and glass Sun-Valleys is revealed by 78,000 2.4W RGB LED nodes. The first and sixth Sun-Valleys (at the Expo entrance and the Bund) each have about 30,000 pixels, thus displaying a more vibrant presentation. This arrangement saves both money and energy.

Different areas of the structure are linked by fiber optics. An intelligent central server provides real-time control and 3D programming. At night or off-peak hours, the intelligent central control server can switch to an energy-saving mode automatically according to a pre-programmed timetable.

LIGHTING DESIGN

DR. YUN WEIMIN
DR. CHU XINGWU
LEE YINGYUAN
WANG DELIN
BAI TING
SHANGHAI GRANDAR LIGHT ART & TECHNOLOGY CO LTD

PHOTOGRAPHY

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Continued from page 8

scanner facility, to analyse the brain activation of volunteers when using vision and touch to explore and assess the samples.

2.1. Physical measurements

All visual and touch measurements were made at a resolution and dynamic sensitivity which is appropriate for comparison with human sensory systems. In the case of the visual appearance measurements, the parameters studied were colour, texture, gloss and white light reflectance. The cornerstone of these measurements was a novel multi-spectral goniometric system, known as IRIS/GASP (image replication imaging spectrometer and gonio-apparent spectrophotometer – see Figure 1), which was specially designed at NPL in order to capture spatial, spectral and texture information across the full sample area [1,2]. Robust characterisation of the illumination and detector systems and the geometric configuration was carried out to ensure the results are valid and have a rigorous metrological basis.

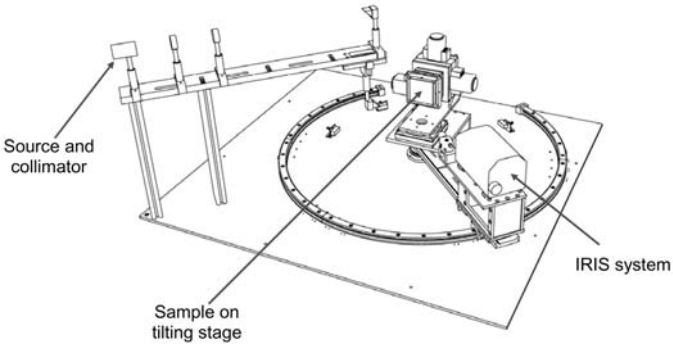

Figure 1. Schematic of the multi-spectral goniometric system developed at NPL, known as 'IRIS/GASP'

3. From properties to prediction

The final element of the project was to use new and leading edge analysis and modelling techniques to determine the mathematical relationship between the measured physical properties, the nerve stimuli these properties create, and how the brain interprets these stimuli, with the ultimate goal of being to be able to use the physical properties of a new material to predict how natural it will seem. Eight predictive models were developed: wood, (V, T and VT), fabric, (V, T and VT) and stone (V and VT). Each model of these uses a small number of optimised physical parameters (typically 5 to 7) in order to describe the perceived naturalness.

The predictive power of the models proved to be extremely good for new samples with properties similar to those used to develop the models, with correlation values in excess of 0.8 in all cases (see Figures 2 and 3 as typical examples of the modelling results).

Tests also showed that the predictive capability was good (reduction of error value of more than 70% see Figure 4) even for materials with physical properties falling outside the gamut of those used to develop the models. Thus the major objective of the project, to demonstrate the ability to make reliable predictions of complex perceptual attributes such as naturalness from measurements of the physical properties of a sample alone, was successfully achieved.

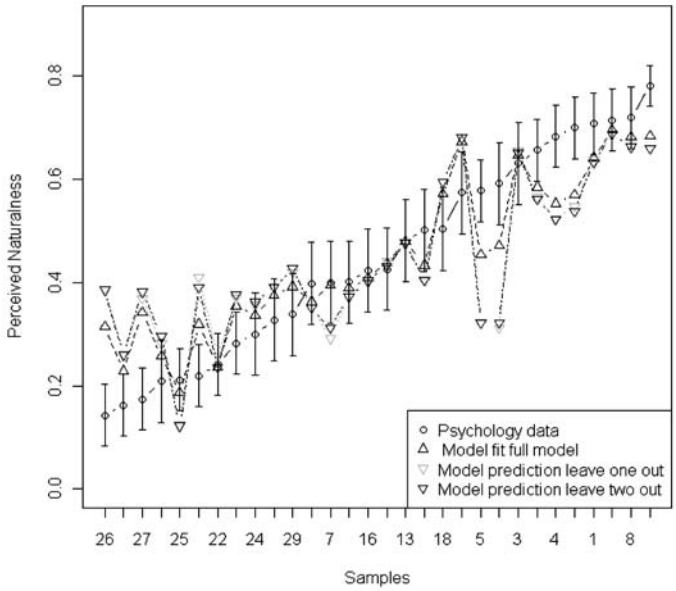

Figure 2. Results of modelling for visual perception of naturalness of wood samples. The R2 value is 0.83 and the MSEP values are 0.0149 (leave-one-out cross validation) and 0.0148 (leave-two-out cross validation).

Perceived naturalness visual mode fabrics

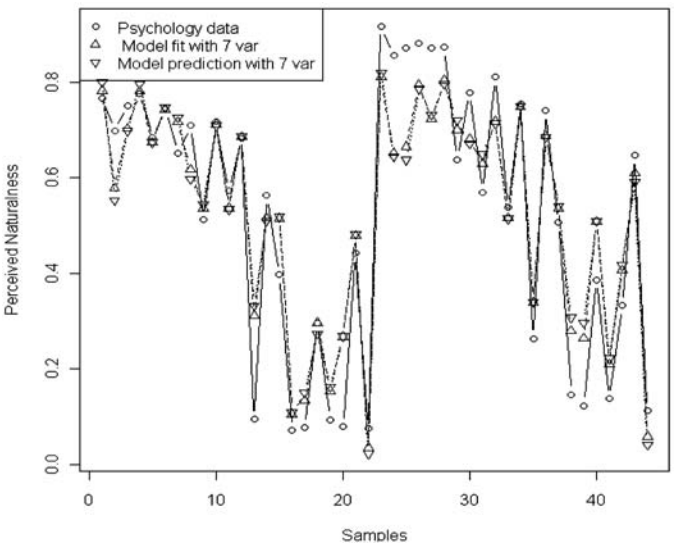

Figure 3. Visual model for fabrics using 7 physical parameters. The R^2 value is 0.88 and the MSEP value is 0.010 (leave-one-out cross validation)

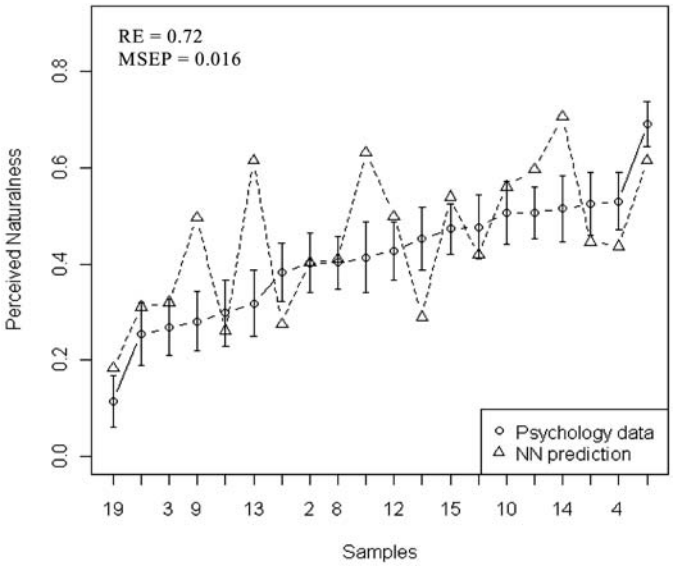

Figure 4. Results of applying visual model developed for oak-type wood samples to a validation set of 20 wood samples with physical properties falling outside the gamut of those used to develop the model. The residual error value is 0.72 and the MSEP value is 0.016 (leave-one-out cross validation).

4. Conclusions

Given the premium our society places on natural materials, the successful outcome of the MONAT research (see [3] to [5] for further details) will potentially be of great commercial as well as scientific importance. It could help create everyday items, furniture and clothes that are more desirable than those made from current synthetics, yet cheaper and more durable than those made from natural materials. For materials like ivory, high quality synthetic substitutes could even help to protect threatened animals and plants, making luxury more affordable and saving precious natural resources.

5. Acknowledgements

This research was part funded by the EU under the Framework 6 Programme (NEST-2004-Path-IMP) and part funded by the National Measurement Office of the UK Department for Business, Innovation and Skills.

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Continued from page 7

CIE 2012
September 19-21, 2012, Hangzhou, China

The Online Abstract Submission System for CIE 2012, taking place in Hangzhou/CN, September 19-21, is now open!. Please click on http://cie2012.abstractcentral.com and you will be guided through the process which we hope is self-explanatory.

Participants are invited to submit original scientific abstracts for oral and poster presentation provided that the abstracts have not been previously published as a full paper. If you have submitted your paper to a journal for publication, please ensure that the publication date will be after the conference.

If you face any technical problems, please, contact the Conference Secretariat (ciecb@cie.co.at).

CIE PUBLICATIONS

Determination of Measurement Uncertainties in Photometry - Supplement 1: Modules and Examples for the Determination of Measurement Uncertainties

Part 1: Modules for the Construction of Measurement Equations
CIE 198-SP1.1:2011

Part 2: Examples for Models with Individual Inputs
CIE 198-SP1.2:2011

Part 3: Examples for the Solving of Systems of Equations
CIE 198-SP1.3:2011

Part 4: Examples for Models with Distributions
CIE 198-SP1.4:2011

This report supplements Technical Report CIE 198:2011 Determination of Measurement Uncertainties in Photometry for the determination of measurement uncertainties associated with the values of selected quantities in photometry. It is organised in a 1st part

(CIE 198-SP1.1:2011), which shows modules for the construction of measurement equations and three more parts with examples grouped with increasing complexity. The 2nd part (CIE 198-SP1.2:2011) deals with single output quantities determined from several different input quantities, while in the 3rd part (CIE 198-SP1.3:2011) examples* for two and more output quantities are presented which are determined from the same set of input quantities. Examples* of quantities defined as integrals of distributions (spectral, angular, spatial) are presented in the 4th part (CIE 198-SP1.4:2011).

** Till to date just one example in part 3 and 4 respectively is available, further ones are to follow. Thus a subscription to the CIE Newsletter is highly recommended to stay updated.*

The publication can only be purchased in combination with the main document CIE 198:2011.

The documents are written in English, with short summaries in French and German. Part 1 consists of 20 pages with 7 figures, Part 2 consists of 94 pages with 25 figures and 28 tables, Part 3 consists of 15 pages (Part 3), and Part 4 consists of 17 pages with 2 figures and 1 table (Part 4).

Determination of Measurement Uncertainties in Photometry
CIE 198:2011

This report is a recommendation for the determination of measurement uncertainties associated with the values of selected quantities in photometry. The report explains the steps from the initial procedures for a measurement of input quantities to a final statement of the output values with associated expanded uncertainties. The main part summarises the fundamental definitions for the evaluation of standard, combined and expanded uncertainties following the rules in the internationally agreed "Guide to the Expression of Uncertainty in Measurements" (GUM) and its supplement 1. In conjunction with this report supplements, with a wide selection of examples, provide guidance on how to model measurement procedures in a measurement equation, combine uncertainties in a budget and convert to the presentation of expanded uncertainty.

The publication is written in English, with a short summary in French and German. It consists of 30 pages with 3 figures and 2 tables.

The report is supplemented by the publication CIE 198-SP1 Determination of Measurement Uncertainties in Photometry-Modules and Examples for the Determination of Measurement Uncertainties, which is divided into 4 parts.

Further Supplements are to follow.

CIE Standard S 014-3/E:2011 Colorimetry - Part 3: CIE Tristimulus Values
CIE S 014-3E:2011

Colour stimuli with different spectral distributions can look alike. An important function of colorimetry is to determine which stimuli look alike to a given observer with a given set of colour-matching functions. This is done by calculating a set of three tristimulus values for each stimulus. Equality of tristimulus values indicates equality of colour appearance under equal irradiation and viewing conditions. This Standard is based on long-standing CIE recommendations (CIE15:2004 Colorimetry, 3rd edition) for the calculation of tristimulus values. It specifies methods of calculating the tristimulus values of colour stimuli for which the spectral distributions are provided. These colour stimuli may be produced by self-luminous light sources or by reflecting or transmitting objects.

The standard method is defined as summation at 1 nm intervals over the wavelength range from 360 nm to 830 nm. Alternative abridged methods are defined for larger intervals (up to 5 nm) and shorter ranges (down to 380 nm to 780 nm). The alternative methods are to be used only when appropriate and when the user has reviewed the impact on the final results.

The Standard may be used in conjunction with the CIE 1931 standard colorimetric observer or the CIE 1964 standard colorimetric observer.

The Standard has been approved by the CIE National Committees.

The publication is written in English.

Proceedings of the 27th Session of the CIE Sun City, South Africa 9 - 16 July 2011
CIE 197:2011

The Proceedings of the 27th Session of the CIE comprise two volumes.

Volume 1, subdivided into two parts, contains on 1230 pages the texts of the Invited Papers, Presented Papers and Posters presented at the Session as well as the Introductions to the Workshops. This Volume is already available at the National Committees of the CIE or at the web shop of the CIE (http://www.techstreet.com/cgi-bin/joint.cgi/cie).

Volume 2 contains the official reports of the administrative and technical meetings of the Session, thus presenting an overview on the technical work in CIE achieved during the quadrennium. It will be provided by end of 2011. (Purchasers of the publication will be notified as soon as Volume 2 is available.)

The price of this publication in electronic format (PDF) is EUR 180.

A printed version is available on request for EUR 300.

(Members of the National Committees of the CIE get 66,7% discount.)

Methods for Evaluating Colour Differences in Images
CIE 199:2011

This Technical Report is concerned with the evaluation of colour differences between two similar images where the output media and the output viewing conditions are similar for both images. It is based on previously published work by CIE and other experts in this field. The report begins by reviewing the factors affecting the evaluation of these colour differences. Various methodologies are described to evaluate colour differences using both visual and instrumental methods. A series of reference colour digital images are presented. A method for statistically analysing average colour differences is described. All the activities of the Technical Committee in charge of this report are finally summarised and recommendations are made to apply either CIELAB or CIEDE2000 for evaluating colour differences for a pair of images displayed in the same medium side by side under the same illumination conditions.

The publication is written in English, with a short summary in French and German. It consists of 50 pages with 22 figures and 7 tables.

The price of this publication is EUR 108 (Members of the National Committees of the CIE get 66,7 % discount).

CIE Supplementary System of Photometry
CIE 200:2011

The CIE Supplementary System of Photometry, which evaluates lights in terms of comparative brightness relationship at any level, is described. The system introduces the concept of equivalent luminance to describe brightness of a light or an object at any level including mesopic levels. The system develops a photometric model to calculate brightness-related equivalent luminance by using three components of existing photometric and colorimetric quantities (photopic luminance, *L*, scotopic luminance, *L'Œ*, and chromatic contribution to brightness, *c*, i.e. brightness-to-luminance ratio (B/L)) with some weighting factors in their combinations that depend on the adaptation level. The use of the system and an example of calculation are also described. Results of testing the system with experimental brightness matching data are given in an appendix.

The publication is written in English, with a short summary in French and German. It consists of 21 pages with 5 figures and 1 table.

The price of this publication is EUR 108 (Members of the National Committees of the CIE get 66,7 % discount).

CIE Standard S 017/E:2011 ILV: International Lighting Vocabulary

CIE has published Standard CIE S 017/E:2011 ILV: International Lighting Vocabulary.

This new edition of the International Lighting Vocabulary (ILV) is the result of intensive work carried out by the Divisions of the CIE to update, and supplement where necessary, the contents of the previous edition (1987). Many new terms have been added, to reflect changes in technologies and practices, existing terms have been updated as necessary, and obsolete terms have been removed.

The aim of this edition of the International Lighting Vocabulary is to promote international standardization in the use of quantities, units, symbols and terminology related to the science and art of light and lighting, colour and vision, photobiology and image technology. This vocabulary provides the definitions and essential information necessary for the understanding and correct usage of the terms included. It does not give extensive detail or explanations of the application of these terms; such information, relevant for experts in each specialized field, is available in the Technical Reports and Standards produced by the CIE.

For this new edition it was decided to restructure the vocabulary to a fully alphabetical arrangement (based on the English terms), without any division into sections or sub-sections. This decision was taken in order to simplify the ILV and aid its use.

The Standard comprises 203 pages and presents the definitions of 1448 terms related to light and lighting.

Price of this Standard: EUR 297 (Members of the CIE National Committees get 66,7 % discount).

Note: *All CIE publications are readily available via the CIE Website (www.cie.co.at)*

WEBWATCH

Innovative Lighting Technique Reduces Risk for Falls in Older Adults

The risk of falling increases with age and poses a major threat to the independence of older adults. The visual system plays an important role in maintaining balance, so age-

related changes to the eye can compromise postural stability. Scientists at the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute have developed a novel night-lighting system that provides visual and spatial cues to promote better postural stability and control. By enhancing the vertical and horizontal elements in the room with lighting, older individuals can better orient themselves to the environment, thereby improving their balance.

Falls risk is higher when a person is changing position, such as standing up or sitting down, especially during the nighttime when visibility and orientation are at minimum, according to Rensselaer Associate Professor Mariana Figueiro, Ph.D., principal investigator on the project.

Her research team designed two night-lighting systems to provide low ambient light that enhances visual elements in the room. The systems use either linear arrays of light-emitting diodes (LEDs) or lasers. One system provided horizontal and vertical cues by placing linear LED arrays along the sides and top of a doorframe. The other system provided laser lines outlining a pathway on the floor.

Link:

http://www.lrc.rpi.edu/resources/newsroom/pr_story.asp?id=209

High-Brightness LED Market Review and Forecast-2011

Revenues for high-brightness LEDs grew by a remarkable 108% to $11.2 billion in 2010, according to a new market report by the leading firm following the LED market. Revenue is expected to peak in 2014 at $16.2B and then fall to $15.3 B in 2015. The dip in revenues will be temporary, as lighting will take over as the engine for growth after 2015.

Some highlights from Strategies Unlimited's new report, High-Brightness LED Market Review and Forecast-2011, include:

LED prices have plummeted 20-40%, except for some specialised applications, such as headlamps. Weaker players or new entrants without much experience-like many from China who entered in during 2010-will retreat from the market. As LEDs become more like commodities, only strong players with deep pockets will survive the fluctuations.

Link:

http://www.optoiq.com/market-research/reports/high-brightness-leds/high-brightness-led-market-review-and-forecast-2011.html

More than a Million LEDs Illuminate China's First Major Highway LED Lighting Project

China recently completed its largest highway lighting upgrade with more than 10,000 street lights featuring more than a million Cree XLamp XP-G and XP-E High Efficiency White (HEW) LEDs. The Shenzhen highway project includes nearly 75 miles of roadways, with LED fixtures installed along one tunnel and four highways.

The LED street lighting installation was a key component of the 2011 Summer Universidade, an international multi-sport event, organised for university athletes by the International University Sports Federation (FISU), hosted by Shenzhen in August.

Link:

http://lighting.com/1-million-leds-light-highway/

MEMBERSHIP APPLICATIONS APPROVED BY GOVERNING BODY

New Members Admitted on 25th September 2011

M. No	Name & Addresses	Grade	Centre
I.0156	Natural Lights Pvt Ltd F-42, Sevaj Farm Nand Puri 22 Godam Industrial Area Jaipur	Institutional	Rajasthan
IM.0156	Mr. Abhishek Jain Natural Lights Pvt Ltd F-42, Sevaj Farm Nand Puri 22 Godam Industrial Area Jaipur	Institutional Representative	Rajasthan
F(L).0733	Mr. Kamal Sethia Cosmos Engineering Industries 8, Ganesh Chandra Avenue Kolkata 700 013	Fellow (Life)	Kolkata
M(L).1638	Mr. Sanjay P. Chandarana Precious Lighting Solutions 9, Athipathan Street, Mount Road Chennai 600 002	Member (Life)	Chennai
M(L).1639	Mr. Sunil Kumar Sharma 148C-1, Bahubali Nagar Niwaru Road, Jhotwara Jaipur 302 012	Member (Life)	Rajasthan
M(L).1640	Mr. Ripu Dhaman Sharma Keselec Schreder (P) Ltd 1004, Prestige Meridian - 1 29 - M G Road Bangalore 560 001	Member (Life)	Karnataka
A(L).1086	Mr. Raj S. Senthil NDFS, Siva Sakthi Vinayaka Flats 29, East Mada Street, Thiruvanmiyur Chennai 600 041	Associate (Life)	Chennai
A.1087	Mr. Jatin M. Joshi Wipro Ltd A/210, Fairdeal House Swastik Cross Roads, Navrangpura Ahmedabad - 9	Associate	Mumbai
A(L).1088	Ms. S. Aarthy Plot No. 4, Door No 1 Rajparis Pooram, Ganesh Nagar Ist Main Road, Madipakkam Chennai 600 091	Associate (Life)	Chennai

Transfer of grade

M(L) 1641	Dr. Neena Jaju Hill House No. 3, The Woods Near Kalewali Phaka, Wakad Pune 411 057	Member (Life) from A(L).0610	Mumbai

New Members Admitted on 07th October 2011

I.0157	L.S.I. Systems (I) Pvt Ltd F-5 East of Kailash New Delhi 110 065	Institutional	Delhi
IM.0157	Mr. Akash Kakkar L.S.I. Systems (I) Pvt Ltd F-5 East of Kailash New Delhi 110 065	Institutional Representative	Delhi
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F(L).0740	Dr. (Mrs.) M.N. Gandevikar E-2, CIRT Campus Pune 411 026	Fellow (Life)	Mumbai
F(L).0741	Mr. Vimal Kumar 1107A, Type V GPRA, Sector - 46 B Chandigarh 160 047	Fellow (Life)	Delhi
F(L).0742	Mr. Surendra Singh B-604, Prince Apt. 54, I.P. Extn., Patparganj Delhi 110 092	Fellow (Life)	Delhi
M(L).1642	Mr. Sameer Gambhir C-1902, Lakshachandi Heights Krishna Vatika Road Gokuldham Mumbai 400 063	Member (Life)	Mumbai
M(L).1643	Mr. Adil Jameel Sayed Tulip Corporation B 12, Nand Kishore Industrial Estate Off Mahakali Caves Road Andheri East Mumbai 400 093	Member (Life)	Mumbai
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M.1651	Mr. Rajesh Kumar Gupta H.No. 2297 Sector 44-C Chandigarh	Member	Delhi
M.1652	Mr. M.S. Pushkarna 241, V.N. Park Nandanpur Road Maqsudpur Jalandhar	Member	Delhi
M.1653	Mr. K.K. Nehra AE (Electrical) CPWD Jalandhar City	Member	Delhi
M.1654	Mr. Vijay Kumar Chopra House No 2212, Phase 10 Sector 64, S.A.S. Nagar Punjab	Member	Delhi
M.1655	Mr. Vikas Gupta 2012, First Floor Sector - 44-C Chandigarh	Member	Delhi
M.1656	Mr. Amit Kumar Goyal 1295-B Sector - 15 Panchkula (Haryana)	Member	Delhi
A(L).1089	Mr. Santosh Mandal VIN Semiconductors Pvt Ltd 306-309, 3rd Floor, Marathon Max L.B.S. Road, near Nirmal Lifestyle Mulund, Mumbai 400 080	Associate (Life)	Mumbai
A(L).1090	Mr. Krishna Ekanath Sondage C/o Vannapu Bhandari Kanitnath Krupa Sr No. 38 Plot No. 36, Shankar Nagar Keshunagar Mundwa Pune 411 036	Associate (Life)	Mumbai
A.1091	Ms. Dipti Roy Flat No 12, Bldg No V-18 Sriram Appt, Indira Shankar Nagari Paud Road, Kothrud Pune	Associate	Mumbai
A.1092	Ms. Anu Assistant Professor Chandigarh College of Architecture Sector -12, PEC Campus Chandigarh 160 012	Associate	Delhi
A(L).1093	Mr. Arshad Shahid Thorn Lighting India Pvt Ltd A-274, First Floor Defence Colony New Delhi 110 024	Associate (Life)	Delhi
S.0619	Mr. Paras Malik 55, Shakti Vihar, Phase 1 Majra Dehradun (Uttrakhand)		Delhi
S.0620	Mr. Vikram Singh Virk 5689, Modern Housing Complex Manimajra Chandigarh		Delhi
S.0621	Ms. Ritvika Luthra House No 2004, Sector 15C Chandigarh		Delhi
S.0622	Mr. Rajat Verma House No 150, Sector 21 Panchkula (Haryana)		Delhi
S.0623	Ms. Drishti Sidhu # 271, Sector 51A Chandigarh		Delhi

PERLA LED LIGHTING

DIFFERENT AND INTELLIGENT LIGHTING FOR THE CITY

Design: Michel Tortel

FOUR LIGHT DISTRIBUTIONS

The Perla is available with two electronic configurations: static or dynamic LED lighting. In both cases, the optical compartment consists of 64 high-power white LEDs distributed over 16 modules that are independently oriented and tilted depending on the type of light distribution required. The use of LEDs permits low height installations (4 metres) under foliage.

VARIABLE INTENSITY

The dynamic version is equipped with blue LEDs that accentuate the luminaire's nocturnal presence. Each luminaire can be individually programmed with 4 timed intervals. Unlike with classic sources, the intensity of the LEDs varies instantaneously, without loss of luminous efficacy.
An optional movement detector can provide a complementary tool for even more effective rationalisation of energy consumption.

Schréder, the urban light

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