International Commission on Illumination
Commission Internationale de l'Eclairage
Internationale Beleuchtungskommission

DIVISION 6: PHOTOBIOLOGY AND PHOTOCHEMISTRY

MINUTES OF THE DIVISION 6 MEETING

HELD BY WEBEX ON 6 OCTOBER 2022 AT 1400-1700 CEST

Attendees, country and division roles

Listed by DMT, NC (DMV, DMA, DA), ANC, TC, DR, L, DC or Official observer

Luc Schlangen (LS)	NL	DD6 (Division Director) NC Rep (National Committee Representative)
Eric Liggins (EL)	GB	DE6 (Division Editor)
Luke Price (LP)	GB	DS6 (Division Secretary) DR6-45 (Division Rapporteur) CIE S026 Toolbox DR6-46 IWCNP II, Manchester Workshop 2019
David H. Sliney (DHS)	US	ADD6 (Associate Division Director) L6-01 (Liaison Rep) IEC/TC76/WG1&9 DC6-03 (Division Correspondent) ASP
Shu Takeshita (ST)	JP	ADD6 NC Rep
Tongseng Mou (TM)	CN	NC Rep
Ralf Zuber (RZ)	DE	NC Rep
David Baeza Moyano (DBM)	ES	NC Rep
John O'Hagan (JOH)	GB	NC Rep L6-08 CEN/TC 169/WG 8 L6-10 IEC/TC 34 (incl. WG 6) DC6-01 WHO DC6-02 ICNIRP JTC-5 Chair, Review of CIE S009 (JTC-14 Chair, Integrative Lighting)
Laura Bellia (LB)	IT	NC Rep
Urszula Blaszczak (UB)	PL	NC Rep
Michael Lynn (ML)	GB	DR6-43 Hyperbilirubinemia Illuminators
Coralie Barrau (CBa)	FR	DR6-47 Light and Lighting in Myopia
Ewan Eadie (EE)	GB	L6-11 ISO/TC142/WG2
Ann R Webb (ARW)	GB	DC6-04 WMO
Walter Chen	TW	Observer (unverified)

1 Welcome by Director

LS welcomed all to the meeting, noting it was helpful to have online meetings to make it easier to attend with travel, and that the meeting was to be recorded purely for completing the minutes. LS asked those present to notify attendance to DS6's email (as a standing item). He welcomed the new members and noted his thanks to departing members.

2 Apologies

LP had received apologies from ADD6 Karl Schulmeister, and from DR6-43 Michael Lynn, who anticipated missing the early part of the meeting.

3 Approval of agenda

With the DS6 addition of "10.1 Reports from Research Fora" agreed, LP would also change the minutes to the CIE terminology for activities, but proposed using the agreed agenda for running the meeting. The modified agenda was accepted with no objections.

4 Minutes previous meeting

The previous minutes were accepted. LP to send the final copy to CB (CIE Central Bureau). **Action LP**

5 Progress report from DD6

LS presented an invitation to CIE's next quadrennial detailed below, and summarised the CIE activities of the last year including the completion of two Division 6 publications on Infrared Eye Trackers and UVGI Luminaires, details of which had been discussed at the previous meeting.

LS then set out the current Division Reporterships and Technical Committees of Division 6, and that these would be discussed in detail in the appropriate parts of the agenda, along with the upcoming event of the Research Forum on Temporal Light Modulation.

On other upcoming events, LS noted the WHO webinar originally planned for Q4 2022 might be postponed due to WHO matters taking priority, and confirmed the details of the next quadrennial, which is the 30th Quadrennial Session of the CIE, to be held on 15-23 September 2022 in Ljubljana, Slovenia.

Finally, LS set out briefly plans for a new JTC on wearable light dosimetry, and an online tutorial on CIE S 026, in this instance timed for the USA time-zone market. He mentioned that CIE proposes to earn fees from sale of videos from tutorials going forward.

Cba asked if LS could say more about what is planned on wearable light dosimetry, and if dosimeter position would be considered. LS showed the terms of reference in the proposal and the rest of the document, noting it may be worth considering and including what physical location (on the body) the sensor can be worn.

DHS emphasised that it is important in circadian dosimetry the position is near the eye, and the importance of not limiting the scope of the activity, so that it can explain when other approaches may not be so good. He noted the joint committee makes it time-consuming, and asked why D6 expertise in metrology is not considered sufficient. In the past D6 had done their own things without D2.

However, it was agreed to follow the agenda, as this was all to be discussed under agenda item 12.

6 Secretary's report

LP noted the meeting contents are saved on the Collaboration Platform, at CIE > DIVISION6 > Documents > Documents > D6 Meetings.

LP showed the results of the D6 ballots that had been conducted by BA and the DMT ballot that had been run by DD6.

7 Editor's report

EL presented his progress with division publications since the previous meeting, with not [as] much had been needed this year, from his role point of view:

The JTC-19 document had produced lots to learning for him on the detail of CIE formatting from the central support, and this had been Peter Zwick's last role in CB with EL.

ML was very good in preparing the report for DR6-43 in making detailed formatting queries, and they were hoping for a long DRR and that this might become a TN.

DR6-46 report was that last thing that EL had reviewed, and which has just gone through a DMT vote.

DD6 thanked DE6 for his time in ensuring these jobs are done thoroughly.

8 Progress reports from Technical Committee Chairs

There were now no Technical Committees that were numbered as Division 6 TCs, as two had published.

JTC-5 Joint Technical Committee to Revise CIE S009/IEC 62471 (John O'Hagan)

Several online editorial meetings have been held between JOH and DHS to prepare a mature draft for review by members of the JTC. This was made available on the Collaboration Platform for the JTC on 2022 09 20.

An ad-hoc meeting took place in conjunction with the IEC TC76 WG9 meeting in Sydney on 2022 09 22. The main reason for this was to ensure that the CIE version of the text (S009) would be accepted through the fast-track procedure in IEC as a replacement for IEC 62471. Several points have been raised and these will be discussed in the JTC.

Hoping to hold an online meeting of the JTC is scheduled for late November 2022, with the aim of getting it to the stage of being balloted.

RZ noted it would be appreciated to have advance details of the meeting. JOH agreed, and explained the ad-hoc meeting had been notified after some people may have already finished work, and so they had not been aware of it until after the meeting.

JTC-8 International Lighting Vocabulary (Peter Zwick)

LS shared the report. He noted that Peter Zwick, after retirement, remains involved in this CIE activity CIE.

The report details progress achieved since June 2021:

- No activities of JTC 8
- Translation of definitions to German in progress (CIE CB)
- Translation of definitions to Chinese in progress (NC CN)
- Maintenance procedure for ILV in discussion within TG CoP

The detailed work plan (milestones and dates), required to complete TC report, is:

Standing committee – continuous work on the improvement of the ILV and harmonization with the IEV (IEC 60050-845), ISO 80000-7 and other international terminology standards.

LP inclusion of definitions from CIE S 026:2018 would be good for future versions, as soon as reasonable. LS when it becomes active again. It would be good to keep track and register them so they do not get forgotten.

JTC-14 Integrative Lighting (John O'Hagan)

JOH shared his report. This was, he considered, a success story, but frustrating, because it took just over a year for ISO to complete their process to publication, but it is now published.

Several editorial meetings were held with the ISO TC274 JWG4 support team. The technical report was in the ISO "system" for many months. ISO/CIE TR 21783 "Light and lighting — Integrative lighting — Non-visual effects" was finally published on 2022 09 22. JOH thanked Peter Dehoff, the ISO convenor, for his support, and acknowledged the initiative of Raphael Kirsch for proposing this work and for his time as the initial ISO convenor.

The work of the JTC (and the ISO JWG) is now complete and the JTC is automatically closed.

JOH volunteered to put something up on the Collaboration Platform to make sure everyone knows it has now been published. As it is not yet on Techstreet, JOH was to check with Kathryn Nield what the agreement is, noting that the final version he had seen did actually have the CIE logo on the front cover. **Action JOH**

JTC-19 Horticultural Lighting (Wei Zhang)

LS shared the report from TCC. In September to October, 2021 (Meeting 05 to 07), JTC had finalized the review of the members' comments on the full draft. Updated full draft was then circulated to JTC members for two weeks review.

In November to December, 2021 (Meeting 08), JTC members commented on the updated draft, observations were finalized, and the revised document was then circulated to DE6 to check.

In December 2021 to March 2022 (Meeting 09), comments were received from DE6, and the 9th JTC meeting was held to review the comments. Necessary communication followed with CIE CB regarding drafting rules, and a WD for JTC ballot was then prepared accordingly.

In March to May, 2022 (Meeting 10), the JTC was balloted. The 10th meeting was held accordingly to review the voting comments. Ballot result, ballot comments and observations, and the updated document were prepared accordingly and provided to CIE Technical Manager on 5th May.

The next steps were to monitor the progress by CIE Technical Manager, and launch any necessary JTC activity accordingly. SI at CB is quite busy with processing all these drafts.

9 Progress reports from Division Reporters

R6-43 Illuminators for Treatment of Infant Hyperbilirubinemia (Michael Lynn, Graham Hart)

LS noted the report from ML was available online. LS showed the slides, but deliberately not describing them in their full detail, noting they were also available online.

LP noted he understood from ML that one manufacturer had designed a new version of a treatment lamp to the action spectrum.

[ML joined the meeting a little after the report had been discussed.]

R6-45 Publication and maintenance of the CIE S026 Toolbox (Luke Price)

No changes were required during the year, and the majority of queries related to where to find the Toolbox and User Guide.

In August there was a query on discrepancies in tabulated values, as the last digits at three consecutive wavelengths in the long-wavelength cone ("LC") action spectrum (661-663 nm) disagreed to the standard CIE S 025:2018. Notably these are not likely to result in any appreciable differences in results.

This was quickly investigated, and DR confirmed the position as he understood it to DD:

With the cubic splines created to interpolate the underlying 5,0 nm interval data (from CIE, 2006), the results between the 5,0 nm values depend on the wavelength step selected for the spline. The values in the standard were intended to be based on the 0,1 nm splines, and tabulated at 1,0 nm intervals, as it was desired to state the maxima of the cone action spectra to the nearest 0,1 nm. The Toolbox agrees to the 0,1 nm basis data (which is available from cvrl.org).

DR made some suggestions at the time for resolving the differences (or, if necessary, ignoring them), but has no information since August on what further action will be taken on the Toolbox or the Standard.

R6-46 Second International Workshop on Circadian and Neurophysiological Photoreception (Luke Price)

The original aim, after the recommendations paper was accepted and published in March 2022, was to publish a CIE TN within 2022. The TN could be published as soon as 8 weeks' time (COP A.4, see timetable).

DR prepared the report from notes and recordings of the technical presentations and discussions from the 2019 workshop.

Over the summer, the workshop participants provided feedback to DR on an "advisers' draft", who were supportive of the report, and comments were addressed.

More recently, the working draft of the DR was circulated to DMT, and again comments were addressed.

Throughout the content has been kept to within 10 pages for brevity and as additional content in a TN would call for an additional approval process.

The revised WD has passed the DMT ballot on 4 October. Timetable:

- It will now proceed to an ED for ballot at D6 and BA (up to 4 weeks prep and 4 weeks ballot).
- Finally, publication can take up to 4 weeks. However, the ballot may have a follow-up ballot if (and only if) there are any technical issues arising, adding up to 8 weeks.

R6-47 The Role of Light and Lighting Conditions in the Prevention, Development and Mitigation of Myopia: a Literature Review (Coralie Barrau)

CBa explained that her starting date had been the beginning 2020, although was officially given as November 2019. She noted her two maternity leaves had significantly delayed the progress of the report (almost a year off in total), as well as a change of professional function and associated work load. Nevertheless, she noted the report is now on track for progress and a continuous literature search and review has been conducted since the beginning, bringing to more than 200 the number of analysed papers.

The delay had made it possible to include recent red light therapy in the studied intervention strategies to slow down the progression of myopia, as well as new questions it raises. Also, recent findings revealed in ARVO 2022 and in IMC 2022 will be included in the report.

There were 15 registered ongoing trials included in the review of not really “low level” red light therapy ongoing. CBa had attended the IMC 2022 in Rotterdam, and would be good to include some of the findings in it. Violet and blue light filters and their impact on myopia progression from Hong Kong.

CBa was contacted by DBM from Department of Chemistry and Biochemistry, Campus Montepríncipe, Universidad San Pablo, Spain, who published in July 2021 in Energies a paper on how new indoor LED lighting may be helping the myopia pandemic. She had considered adding extracts from the publication of Mr Baeza in the report and will have exchanges with him for proof-reading.

CBa was also contacted by Mr Cai and Lorna Wen from China National Institute of Standardization, China to be a proof-reader of the report. CNIS has proposed to provide us with information on their GB standards (see below) for myopia control and ongoing actions with the Chinese Ministry of Education & Chinese National Health Commission.

[DS6 Note not forming part of the meeting: “The National Standards of the People's Republic of China, coded as GB, are the standards issued by the Standardization Administration of China under the authorization of Article 10 of the Standardization Law of the People's Republic of China.”]

A shareable draft should be accessible by the end of the year for global review and comments. Two researchers involved in finely understanding the light impacts of myopia have already agreed to review the report, Prof Francine Behar-Cohen (France) and Dr Ranjay Chakraborty (Australia).

LS congratulated CBa and thanked her for the achievement of reviewing so many papers and staying with the report during the rapid developments over the last few years.

CBa explained light is implied in the prevention, so the question is does it have a role in treatment strategies. It was maybe too soon to decide on the ultimate direction on that question. CBa contrasted measurement and evaluation by questionnaires sent to parents who are not with the child all day long, as CIE needs to look at this question very carefully, but does not know what should be done.

TM noted this was challenging work, and that he would like to mention the benefit and the positive when we use light and lighting. Red light could be beneficial, but in China there is a big argument on this topic, with some wanting to promote it. However, others want to stop this therapy being used on the youngest children for prevention, because the device was not designed for this purpose. He note the need to talk about positives and negatives of therapies being considered.

CBa added that the device is really dazzling, and the compliance of the children is not certain, but the device may have been used for amblyopia treatment before. There were implications for chronic exposure, eye ageing and rebound effects (similar to atropine eye drops).

LP, supported by DHS, suggested the possibility of other activities, such as at the upcoming quadrennial meeting with D1, or a CIE Research Forum or both. LS agreed this would be one of things that would serve the topic.

DHS thought this was one of those cases of trying to prove hypotheses rather than disprove them, and that it was right to be prepared to find out light has next to no effect. He argued that smaller pupil size and depth of focus the majority of effect, and low light levels indoors putting a lot of pressure on the ciliary muscles.

10 Reports from Liaison Representatives and Division Correspondents

LS introduced the following activities:

L6-01 IEC/TC76/WG1&9L Optical radiation safety and laser equipment - Optical Radiation Safety and Non-Coherent Sources (David Sliney)

DHS's report set out that major progress had been made in lamp safety in 62471-6 which is safety of [blue and UV] lamps – one of the more challenging vertical standards was chosen to go first. Assuming 8 h at 20 cm is rather absurd, as the reasonably worse case exposure condition over a period of time. which when investigated mostly came out to be at least 1 m away, so for instance insect traps were not a concern for a hazard under this assumption.

This liaison is in parallel with JOH's on the S 009 update, trying to be as compatible as possible with that draft standard.

L6-08 CEN TC169 WG8 Lighting Applications - Photobiology (John O'Hagan)

JOH's report was shared on the screen. The four documents listed in report keep coming up for review, and Part 2 has just been reconfirmed because apart from the UK, no one seems to have sufficient knowledge to vote against them. He reported that CEN TC169 WG8 has had no activity in the last year, and the liaison is really reporting on activity in the WG that could lead to publications that conflict with existing standards.

L6-10 IEC/TC 34 Lighting (John O'Hagan)

JOH's second liaison report noted that CIE has three IEC liaisons, the others being with Kathryn Nield and Peter Blattner, and that there were five liaisons back to IEC. For Division 6, the interest is mainly in 62471-7, which deals with the visible part of the spectrum, currently at FDIS stage. The BLH rating in the FDIS is confusing as most of the sources do not have a BLH. He noted IEC are moving into horticultural lighting safety and performance, and CIE D6 might be most interested in the optical safety aspects.

L6-11 ISO/TC142/WG2 Cleaning equipment for air and other gases - UV-C technology (Ewan Eadie)

[Alternative title: ISO/TC 142/WG2 Revision of ISO 15858:2016 UV-C Devices – Safety information – Permissible human exposure]

EE began the role of CIE Liaison Representative to ISO/TC 142/WG2 in May 2022. In July 2022 the working group were asked for further comments on the revision of ISO 15858 following a meeting that had been held in April 2022 (before the liaison was set up). In addition to seeking views on the standard, the WG were asked whether the standard should include Far-UVC at 222 nm. Email correspondence indicated that the majority of the working group believe the standard should cover all ultraviolet-C wavelengths and not be limited to specific technologies.

EE undertook a review of ISO 15858 in July 2022 and provided extensive written feedback on the 4th of August 2022. Overall, EE's opinion is that this standard requires a significant re-write. EE's comments on the document can be found in the report online.

It was discussed what EE should be doing as an LR for CIE in case it be brought to D6 for approval (with insufficient rewrite), and what approach might be used for putting (more) pressure on the ISO TC or WG. LS wanted to ensure that the liaison's vision is considered, and felt that CIE should be guarded to ensure it is taken along. However, he does not know how to proceed, and there were issues to be addressed by for CB or BA.

JOH responded that EE should be careful to act for CIE as a liaison, rather than a formal member of the committee, and that he himself was a member on the WG for BSI. It was frustrating because the argument was put strongly that it is not fit for purpose. JOH suggested he could just push more strongly to rewrite it.

DHS agreed with JOH, and was frustrated that he missed the last meeting for technical reasons. DHS said the document points to an important research need – how long should you integrate your TWA? Should periods of 24 hours or 12 hours be used rather than 8 hours, that originated for the occupational exposure limits based on the workday. DHS recalled a study in a German journal on radiation which looked at the reciprocity of erythema over a duration of at least 5 or 6 hours. He noted that the ASP and CIE experts on this topic were no longer around, but that it used to be considered known that erythema was transient and didn't last. EE and DHS have discussed this in detail. DHS said the assumption of reciprocity falls over after a few hours, but EE is remaining more cautious about relying on this.

Without a UVC lamp attached to your arm for 12 hours, DHS was not sure how to run a relevant human experiment, and invited EE to comment. EE agreed with DHS about trying to work out the time horizon for these effects. EE is unsure if that question properly belongs to ICNIRP rather than this standard, which seems to just reference other standards, but perhaps not particularly well.

LS asked if the activity could be implemented in sections. EE felt although not all the committee particularly happy with the standard, there is low attendance etc.

DHS suggested that D6 has promulgated to at least 3 different technical standards relating to UVC and germicidal aspects, noting he often refers to them.

In conclusion, it was put forward that some alignment (between EE, JOH and DHS) on which bits most need rewriting, and collectively pushing for it, might help to enforce it.

DC6-01 WHO (John O'Hagan)

JOH presented his report on this Division Correspondence. The DC relates to NIR basic safety standards. Progress has been slow due to other priorities for the WHO radiation team. However, a paper was published in the Journal of Radiological Protection: A coherent framework for non-ionising radiation protection. This is available to download for free at link in report in the online D6 meeting folder.

JOH noted the WHO webinar, that LS had mentioned, was a part of getting CIE recognised as a Non-Government Organisation which would have certain political advantages for CIE, and would raise the status of CIE with other similar organisations. WHO still intend to get this arranged for late November, which means CIE will have formally done something with WHO, which is a big box to tick.

DC6-02 ICNIRP (John O'Hagan)

JOH had attended a meeting in Japan virtually, and wanted to see if there was appetite for having a more formal group of liaisons, but with an emphasis on government type liaisons.

Several topics were listed (see report), including short wavelength light and circadian rhythms. This is a new subject for ICNIRP and although some of the experts have appropriate expertise, the document doesn't stack up or add much to the literature/knowledge. There was a preliminary draft out, and would be a meeting aiming to resolve this position.

Another topic was chronic UV exposure. There was a move to using UV and UVC in the environment, but most of our experience has been acute rather than chronic exposures. Nigel Cridland (at ICNIRP) was looking at this, but it was proving quite challenging.

DC6-03 ASP (David Sliney)

DHS asked about the difference between the new roles or LR and DC. LS clarified that DC is a little less formal than the CIE liaison roles, so we don't have a formal interaction basis, and relies on someone who is active to give an update.

ASP is the American Society of Photobiology, and DHS noted it is one of the larger organisations holding scientific meetings in photobiology, the other being the European Society of Photobiology, ESP. The two alternate years for meetings, ESP will be meeting in 2023 and ASP again in 2024. ASP offers a monthly webinar on different subjects in photobiology, which DHS thought might be free to attend. See website in report. DHS noted D6 once often had their meetings as an offshoot of ASP an ESP meetings when travel was more frequent.

DC6-04 WMO (Ann Webb)

ARW presented her report, noting WMO had a joint publication with D6 many years ago. The main link is to keep a look out at publication and guides for metereological instruments, as some of the measurements in scope include radiation (solar) and global atmospheric watch measure of UV radiation. In addition, other measurements done via radiation, e.g. satellite monitoring.

None of the chapters being currently reviewed have much radiation content.

10.1 Reports from Research Fora Conveners

LS shared the report from RF-02 convener Jennifer Veitch on screen. RF-02 concerns Temporal Light Modulation, and over the year had continued email discussions and a Webex meeting in January on terms and definitions. A hybrid meeting takes place next week in Athens on 12 October.

DHS asked if there was a registration fee virtually. JOH responded only for attendance in person, for the costs of providing lunch.

11 Dissolution of TCs and Reporterships

This was a standing item, and no dissolutions were proposed. It was noted that activities that produce their publications are ordinarily concluded without the need for this to be initiated from the Division. LS noted that TCs that had reported were dissolved, which included TC6-52, TC6-64 and JTC-14. LS thanked those who had participated and supported these activities.

LP noted that CIE had a review encompassing interactive systems like the Toolbox, and LS confirmed there was a Task force working on digital products and how best to manage them.

12 Proposals for TCs and Reporterships

The proposal on wearables was discussed earlier, and no further comments on this were made at this point.

In relation to possible TC proposals, ML mentioned blue light and the possible effects retinopathy of prematurity. He noted the reason for babies becoming blinded is because of over-prescription of oxygen, which affects the retinal vessels. However, there are still people still saying the cause is fluorescent lighting introduced in the 1940s. ML wondered if anyone at D6 wanted to take it any further.

DHS queried if eyelids aren't closed in such preterm infants, so that the blue light wouldn't be transmitted, whilst agreeing it is wise to cover the eyes. ML said when the covers slip, no-one hurries to replace them, and so there is a demand to see evidence you don't need to do it.

LS summarised that with a good base on knowledge and people wishing to take it forward, then a proposal on this possible activity could be considered. He noted disentangling the two effects (oxygen and light) could be both important and difficult.

LS asked if there were any new reportership topics to be proposed. None were raised.

LS asked if anyone wanted to suggest any new activities, e.g. ones worth having a workshop in the upcoming CIE meeting in 2023.

LS confirmed UVC and myopia were being considered.

DHS suggested looking at current knowledge on long-term effects of exposure to UV, either independently, or as part of the annual meeting. LS proposed a workshop with possible speakers would be useful. DHS only concerned a thorough review would require a day or maybe two days. LS workshops are 2-4 hours, but to allow more consideration in depth it could be combined with a symposium of presentations. DHS was to look into this a little further. **Action DHS.**

LS said on myopia that at this point an activity on this topic could be proposed shortly. DHS felt myopia would have to involve D1 on vision science. CBa wanted to ask what do we put into the activity? LS suggested it could discuss the report and reviewed publications, and possibly include external researchers active in the field. He noted that CIE has limited funds to invite speakers at a workshop, e.g. at an annual conference, but was more able to fund keynote speakers. A hybrid workshop was discussed, but not agreed. CBa was ready to be involved in taking this further, and will target a few people, and see who would be able to attend or participate. **Action CBa.**

LS asked JOH who could help on long-term effects of UV, and JOH said Nigel Cridland from ICNIRP would be good. JOH noted a workshop at a quadrennial meeting would also lend more weight to CIE on this topic. EE agreed it would help with his liaison role, and it would be good to hear the current beliefs outside of solar UV.

LS suggested the topic could be combined with UVGI, and DHS noted the argument has been UVC chronic exposure is blocked by the atmosphere before now, and there were questions about the target molecules that UVC for the most part doesn't reach. DHS felt it might be possible to find funds to support a 2-day workshop, e.g. in Europe or the US, on research and research needs on "far UVC", as there was some interest in funding such activities. For timing, he suggested that ESP is next year in August in Lyon, although not directly adjacent to the CIE meeting.

13 Division Officers

LS had earlier mentioned his intention to step down at the end of his term. He invited those present to consider nominating themselves or others who would be suitable and willing. There was not further discussion at this point.

LP also mentioned he felt he should hand over the DS role at the same point, and that the timing is consistent with allowing a new DD to pick their own DS.

14 Division Research Strategy

LS presented a slide with several bullets for the present Division strategy dated 2021, and reported that a third Manchester workshop was currently being discussed, on a topic of an alpha-opic framework for animals, rather than humans. LS encouraged further strategy input from D6 representatives, that he could pass along to CIE and its upcoming research strategy update.

LB stressed there was a need from medical world for the effects of optical radiation on the other alpha-opic functions. We are using melanopic, but were the five photoreceptors needed. LS responded that further research on this was perhaps needed, and also for animals. It was noted ipRGCs are involved in visual effects, as an example. LS agreed to include in the strategy how (other) photoreceptors contribute to both visual and non-visual effects.

LP asked whether the effects on light on myopia should include accommodation distance, as this is often indicated, and argued this was a part of light stimuli and photobiology. LP agreed to write to LS and CBa about expanding the scope and complexity shown in the research strategy for myopia research.

CBa was interested in how light triggers pain, migraine, photophobia crises and discomfort. Is this a question of interest? Would require time and digging. DHS noted the discovery of neuropsin in the cornea, that apparently links into the nerve cells, noting the tactile sensitivity near the eyes. DHS agreed to send LS a bullet point on retinal sensitivity. LS noted he had deliberately not mentioned the word retinal in his present item as the skin functions are in scope. DHS guesses action spectra rather than spectral sensitivity, as the more general term, the latter more typically referring to eye responses.

15 Future meetings

LS confirmed the next meeting would be in conjunction with the CIE Quadrennial meeting at Ljubljana during 15-23 Sept, with D6 meeting time and date to be confirmed.

16 Any Other Business

There was no other business.

17 Adjournment

LS thanked attendees for their time and contributions, to the DMT, invited them to attend the next time and adjourned the meeting.

Luke Price, 24 October 2022

Current list of DMs, TCMs, DRs, LRs and DCs

For TCMs, DRs, LRs and DCs, please see minutes. New members are marked with an asterisk *. If different, members at the previous meeting are shown in strikethrough.

Official Division 6 Members (Vacancies and voting status not shown)

AT	Austria	Karl Schulmeister
AU	Australia	Urbain de Plessis
BE	Belgium	Guy Vandermeersch
BG	Bulgaria	Kamelia Nikolova
BR	Brazil	Isac Roizenblatt
CA	Canada	Sami Qutob
CH	Switzerland	Beat Gerber
CN	China	Tongsheng Mou
DE	Germany	Ralf Zuber
DK	Denmark	* Anne Bay ~~Jens Christoffersen~~
ES	Spain	David Baeza Moyano
FI	Finland	Helge Lemmetyinen
FR	France	Coralie Barrau
GB	United Kingdom	John O'Hagan
HK	Hong Kong S.A.R., CN	TM Chung
HU	Hungary	Gabriella Csík
IL	Israel	Gabriela Dorfman-Furman
IT	Italy	Laura Bellia
JP	Japan	Shu Takeshita
KR	South Korea	Meeryoung Cho
MY	Malaysia	Vineetha Kalavally
NL	Netherlands	Luc Schlangen
NO	Norway	Terje Christensen
NZ	New Zealand	~~Chris Chitty~~
PL	Poland	Urszula Blaszczak
RO	Romania	Constantin Ion
RS	Serbia	Zoran Ledinski
RU	Russia	Roman Belyaev
SE	Sweden	Thorbjörn Laike
SI	Slovenia	Katja Malovrh Rebec
TR	Turkey	Banu Manav
TW	Chinese Taipei	Chien-Yue Chen
US	United States	George C Brainard
ZA	South Africa	* Edwin Mofokeng ~~Natasha van der Walt~~

TCMs (may include TCMs from other divisions in JTCs)

New members are marked with an asterisk *. If different, members at the previous meeting are shown in strikethrough.

JTC-5 Joint Technical Committee to Revise CIE S009/IEC 62471

See 2021 meeting notes. No updated list was included in the 2022 Activity report.

JTC-8 International Lighting Vocabulary

TC Chair: Peter Zwick	AT

TC Members:

Tony Bergen	AU
Peter Blattner	CH
Steve Fotios	GB
Teresa Goodman	GB
Tommy Goven	SE
Warren Julian	AU
Sharon McFadden	CA
John O'Hagan	GB
Mike Pointer	GB
Danny Rich	US
Hiroshi Shitomi	JP
David Sliney	US
Armin Sperling	DE
Peter Thorns	GB
Wei Zhang	CN
Joanne Zwinkels	CA

JTC-14 Integrative Lighting (ISO JWG 4)

See 2021 meeting notes. JTC is no longer active.

JTC-19 Horticultural Lighting

TC Chair: Wei Zhang	CN (JTC Chair Division 6)

TC Members:

Paul Dekker	NL (JTC Co-chair Division 2)
Anders Thorseth	DK
Andrey Turkin	RU
Armin Sperling	DE
Georges Zissis	FR
Gerbe Van Dreumel	NL
Ian Ashdown	CA

Kazuhiro Fujiwara	JP
Laszlo Balazs	HU
Markus Schneider	DE
Paulo Pinho	FI
Peter Sperfeld	DE
Qian Li	CN
Tony Bergen	AU