

**CIE Division 8 - Image Technology
Fourth Meeting, Monday, 30 June 2003
25th Session of the CIE, San Diego, CA USA**

Minutes (Revised*)

1. Opening of the Meeting

The fourth meeting of CIE Division 8, Image Technology, was held in conjunction with the 25th Session of the CIE in San Diego, CA, USA, on June 30, 2003. The meeting was called to order at 8:30 a.m. by Division Director Todd Newman.

2. Announcements

Only routine housekeeping announcements with respect to the conference were made.

3. Roll Call of Members

The roll call of national body representatives indicated that official delegates were present from the following eight countries:

Canada	Dr. Alan Robertson delegated by Réjean Baribeau
Germany	Prof. Klaus Richter delegated by Prof. Dr. Bernard Hill
Great Britain	Dr. Mike Pointer
Hungary	Dr. Janos Schanda
Japan	Dr. Hirohisa Yaguchi
South Africa	P. J. Botha for Natasha van Tonder
Switzerland	Dr. Laszlo Gloetzer
United States	Mr Alan Kravetz

4. Identification and introduction of visitors and guests

Those in attendance made self introductions. These included 24 individuals from 13 countries.

5. Agenda

Director Newman presented the agenda (Attachment A, D8N105). The following line items were added and the modified agenda was approved.

- 5a Approval of Minutes of Derby meeting
- 7a Reports from Reporters
- 8a New Liaisons
- 10a Next meeting
- 10b Potential New Work Items

5a Minutes of Derby Meeting

The minutes of the third meeting of Division 8 held on Monday, 10 April 2000 at the University of Derby in Derby, England, had been distributed to National Delegates and were available at this meeting.

The minutes of the third meeting of CIE Division 8 were approved.

6. Division Directors Report

Director Newman reported on the status of the Division. His presentation was drawn from the CIE Division 8 Quadrennial Report (Attachment B, D8N100). The salient points are:

- Division leadership
 Director Todd Newman
 Editor Mike Pointer
 Secretary David McDowell

- Technical Committees:
 There are currently 7 TCs within Division 8 which are:
 TC8-01 "Colour Appearance Model for Colour Management Applications", chairperson: N Moroney (USA),
 TC8-02 "Colour Difference Evaluation in Images", chairperson: M R Luo (UK),
 TC8-03 "Gamut Mapping", chairperson: J Morovic (UK)
 TC8-04 "Adaptation under Mixed Illumination Conditions", chairperson: N Katoh (JP)
 TC8-05 "Communication of Colour Information", chairperson: R Buckley (USA),
 TC8-06 "Image Technology Vocabulary", chairperson: J Schanda (Hungary),
 TC8-07 "Multispectral Imaging", chairperson: P Herzog (Germany).

- Reporters
 The only Reportership currently active in Division 8 is R8-03 "Potential Interaction between CIE and IEC TA2" under reporter: H Ikeda (JP). Although this was to have been a 1 year Reportership it was never dissolved (See action later in meeting notes).

 In addition, although Reportership R8-04, "The effect of Fluorescence on colour characterization of image reproduction media", was dissolved by Division ballot, Dr. Danny Rich is in the process of completing his report for that reportership.

- Technical Reports and Publications
 No CIE Technical Reports have been published since the last Division meeting. The Proceedings of the 2000 Expert Symposium held under the auspices of Division 8 were published as:
Publication CIE x021-2001, "Proceedings of the CIE Expert Symposium on Extended Range Colour Spaces".

- Status of Work
 The status of the work of the Division 8 TCs is as follows:
TC 8-01 - The TC report has been completed and sent to the Central Bureau for final editing and balloting.

TC 8-02: - An interim report is being prepared by the Chairman which will outline progress to date and an experimental plan for the ongoing work of the TC.

TC 8-03 - The TC report has been completed and sent to the Central Bureau for final editing and balloting. It is currently in ballot with a closure date of 4 July 2003.

TC 8-04 - A second draft of the TC report has been prepared and will be released to the TC for review.

TC 8-05 A first draft of the TC Report has been prepared.

TC 8-06 - The Chairman has been collecting terminology for the report.

TC 8-07 - The TC was formed in 2002. It held its first meeting in November of that year. The TC is still formulating a plan of work.

- Communications

The Division website (www.colour.org) makes most Division documents, reports, membership lists, contact details and circulars readily available to Division members worldwide at any time. The web site is hosted on the web server of the Canon Development Americas, Inc.

Todd responded to several questions concerning his report and the following actions were proposed:

- A motion was made, seconded and unanimously approved to dissolve Reportership R8-03 with thanks to Dr H. Ikeda for his work on behalf of Division 8.
- Because there had been some difficulty reported in obtaining copies of the TC 8-01 and 8-03 reports, a motion was made, seconded and unanimously approved to request CIE CB to extend the ballot on these reports to the end of July.

7 Reports from TC Chairs

TC8-01, Marony – Nothing to report. A document is in ballot.

TC8-02, Luo – Dr Luo made a presentation (Attachment C, D8N112) in which he reported that the deliverables of TC 8-02 are:

- Technical Report Methods for deriving colour difference images
- A collection of available experimental data sets
- A ring test to assess a set of printed images between different sites
- To recommend a colour difference formula with weights for individual colour difference components and an option on spatial filters

With respect to progress on these deliverables he reported that:

- A preliminary TC report has been completed
- It includes implementation of spatial filters as a worked example
- A Ring test is being completed including:
 - Preparation of a set of printed images
 - Visual assessments at the University of Derby
 - Visual assessments at HP (Barcelona)
 - Experiment at FujiFilm, Japan to be completed on 15 July.
 - Experiment at HP (Boise), USA to be completed by Mid. August.

The next meeting of the TC is at CIC 03

The goal for a 1st Technical Report is Nov 03

The goal for a 2nd Technical Report is Feb 04

TC8-03, Morovic – Nothing to report. A document is in ballot

TC8-04, Katoh – Work is in progress to complete final draft of TC report.

TC8-05, Buckley – The TC is building on the work of and coordinating with TC42 and in particular the work on ISO 22028-1. It is hoped that a preliminary Technical Report will be available shortly.

TC8-06, Schanda – **Work is continuing on definitions and all are invited to contribute.**

TC8-07, Herzog – (Written report provided – Attachment D, D8N101) The work is beginning with a survey of the existing data formats for multispectral images, to specify the requirements of a general data format, and to define a new such data format, based on the knowledge gained before. Information on existing data formats have been submitted by 4 groups, and the details are currently being reviewed. The next meeting will be at the IS&T Color Imaging Conference in Nov 2003.

8. Liaison Reports

Liaison reports were received from:

SCIT – Dr Schanda
 ISO/TC130 – Dr Rich
 ISO/TC42 – Dr Pointer
 ASTM – Dr Pointer
 IEC/TC100 – Dr Rich

8a New Liaisons

A proposal to create a liaison with the AIC was considered and decided that there was not sufficient technical overlap to justify a liaison.

Liaison with JBMA was proposed but it was felt that there was sufficient overlap of participants that a formal liaison was not needed.

A formal liaison with JTC1/SC28 was proposed and agreed to and Professor Klaus Richter agreed to support this liaison.

9 National Body Reports

A number of oral reports were given.

It was noted in particular that Japan has created national committees to support TC 8-03 and 8-07

10 Open question and discussion session

Alan Kravetz noted that Div 2 has formed a reportership RS2 -29 called Characterization of imaging luminous measurement devices.

Dr Schanda noted that Div 1 has a Reportership re soft copy hard copy comparison for standard office conditions

A new Reportership was proposed on image appearance with Mark Fairchild of RIT as the reporter

The terms of reference would be:

To investigate and report on research extending colour appearance models to include properties of spatial vision for static images and scenes with particular focus on

- 1 Spatial filtering of image difference metrics
- 2 Spatial adaptation for image rendering
- 3 Potential interaction between 1 and 2

This was approved pending concurrence from Dr Fairchild.

A possible TC was discussed under the topic of "Testing of Spatial Colour Appearance Models"

Possible terms of reference were:

To design, implement and report the results of a psychophysical test comparing the output of spatial colour appearance models (including Retinex, MOM, and iCAM) for high dynamic range still images.

The proposed chair was G Johnson (US) of RIT.

Todd Newman will discuss this with Johnson and others for possible action.

There was an informal discussion of a proposal from France (COQUELICOT). However there was not enough information and Todd Newman will investigate further.

10a Next meeting

Several possibilities were discussed for the next meeting. The most promising was the ISCC Williamsburg meeting in Nov 05 with IS&T Color Imaging Conference as a second possibility.

11 Closing

The meeting was closed by Todd Newman with thanks to all for attending.

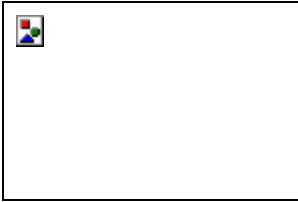
*** Note**

Meeting notes revised to add document numbers and to correct attendance list of National Body Representatives. Your Secretary failed to review both attendance sheets and did not list several National Body representatives who were present. This also highlighted the need for a document roster and numbering system which has been initiated.

**CIE Division 8 Image Technology
Division Meeting
June 30, 2003, 8:15 am - Noon
Royal Palm 5/6
Town and Country Hotel
San Diego, CA**

Agenda

1. Opening and welcome by Division Director, Todd Newman
2. Announcements
3. Roll call of National Body delegates
4. Identification and introduction of visitors and guests
5. Review and confirmation of agenda
6. Director's report
7. Reports from TC Chairs
 - TC8-01, Colour Appearance Model for Colour Management Applications, N Moroney
 - TC8-02, Colour Difference Evaluation in Images, R Luo
 - TC8-03, Gamut Mapping, J Morovic
 - TC8-04, Adaptation under Mixed Illumination Conditions, N Katoh
 - TC8-05, Communication of Colour Information, R Buckley
 - TC8-06, Image Technology Vocabulary, J Schanda
 - TC8-07, Multispectral Imaging, P Herzog
8. Liaison Reports
 - ISO SCIT, J Schanda
 - ISO/TC 130, Graphic Technology, D Rich
 - ISO/TC 42, Photography, M Pointer
 - ASTM, M Pointer
 - IEC/TC100, Multimedia, D Rich
9. Reports/Comments from National Body representatives.
10. Open question and discussion opportunity
11. Closing



**COMMISSION INTERNATIONALE DE L'ECLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION**

DIVISION 8: IMAGE TECHNOLOGY

QUADRENNIAL REPORT 1999-2003

1. TERMS OF REFERENCE

To study procedures and prepare guides and standards for the optical, visual and metrological aspects of the communication, processing, and reproduction of images, using all types of analogue and digital imaging devices, storage media and imaging media.

2. ADMINISTRATIVE MATTERS

T Newman (USA) was appointed for a first term as **Division Director** by the CIE Board at the 1999 CIE Session in Warsaw. M Stokes (USA), D McDowell (USA), and M Pointer were appointed as Associate Directors at the same time. M. Stokes soon resigned from the Division. By mutual consent, D McDowell was appointed **Division secretary** and M Pointer (UK) as **Division editor**. N Ohta (JP) was appointed Associate Director for Reporters. He also later resigned because of other commitments.

The following **new Technical Committees** commenced work during the quadrennial:

TC8-01 "Colour Appearance Model for Colour Management Applications", chairperson: G Dispoto (USA),

TC8-02 "Colour Difference Evaluation in Images", chairperson: M Stokes (USA),

TC8-03 "Gamut Mapping", chairperson: J Morovic (UK)

TC8-04 "Adaptation under Mixed Illumination Conditions", chairperson: N Katoh (JP)

TC8-05 "Communication of Colour Information", chairperson: L MacDonald (UK),

TC8-06 "Image Technology Vocabulary", chairperson: J Schanda (Hungary),

TC8-07 "Multispectral Imaging", chairperson: P Herzog (Germany)

There were **changes in TC chairpersons** in the following Technical Committees:

TC8-01: “Colour Appearance Models for Colour Management Applications”, previous chairperson: G Dispoto (USA), new chairperson: N Moroney (USA),

TC8-02: “Colour Difference Evaluation in Images ”, previous chairperson: M Stokes (USA), new chairperson: M R Luo (UK),

TC8-05: "Communication of Colour Information", previous chairperson: L MacDonald (UK), new chairperson: R Buckley (USA),

New reporterships were established in the following areas:

R8-01: “Grading of Colour Measurement Equipment ”, reporter: Y Ohno (USA)

R8-02: “Fluorescence ”, reporter: C McCamy (USA)

R8-03: “Potential Interaction between CIE and IEC TA2 ”, reporter: H Ikeda (JP)

R8-04: “Effects of Fluorescence in characterization of Imaging Media ”, reporter: D Rich (USA)

Dissolved reporterships :

R8-01: “Grading of Color Measurement Equipment”, report Y Ohno

This reportership was dissolved because it had not made tangible progress.

R8-02: “Fluorescence”, reporter C McCamy

R8-02 was dissolved after a report that indicated that fluorescence was potentially important. The report may be found on the Division web-site in the notes from the 28 June Division meeting in Warsaw. The report led the creation of R8-04 to develop more detailed information on the importance of fluorescence in practical situations. Most reporterships were dissolved after producing a report on their subject matter, a few others due to inactivity. The produced reports were either published in the CIE collections or led to the formation of Technical committees.

R8-04: “The effect of Fluorescence on colour characterization of image reproduction media”

While the reportership was terminated, D Rich has continued to work in the area. It is likely that he will produce a report in the next year.

3. MEETINGS

In order to make the attendance of Division meetings more worthwhile for Division members and consultants, these meetings were scheduled in conjunction with major conferences and symposia in colour imaging. A further benefit of such an arrangement is the opportunity to attract new contributors to the Divisional working programme from attendants attendees at of the associated event. The following **Division meetings** were held:

28 June 1999, Warsaw (Poland) - during the 24th CIE quadrennial session,

10 April 2000, Derby (England) - in conjunction with the Colour 2000 conference.

Division 8 coordinated and arranged a CIE Expert Symposium on Extended Range Colour Spaces in Scottsdale AZ on 11 Nov 2000.

An informal Division discussion was held on 10 November 2001 in Scottsdale (USA), in conjunction with meetings of most of the Division 8 TCs, to discuss the status and future directions of the division. This meeting led to the creation of TC8-07, because of the extensive interest in this field.

4. TECHNICAL REPORTS AND PUBLICATIONS

No CIE **Technical Reports** have been published this term. The Proceedings of the 2000 Expert Symposium were published as:

Publication CIE x021-2001, "Proceedings of the CIE Expert Symposium on Extended Range Colour Spaces".

5. INTERNATIONAL LIAISONS

Liaisons were established with the following international organizations:

JTAG2	JTAG2 was replaced by SCIT (J Schanda)
International Color Consortium	Vacant
ISO/TC 130, Graphic Technology	D Rich (USA)
ISO/TC 42: Photography	M Pointer (UK)
ASTM	M Pointer (UK)
IEC/TC100	D Rich (USA)

6. TECHNICAL COMMITTEE WORK IN PROGRESS

TC NAME

STATUS

8-01 Colour Appearance Modeling for Color Management Applications. (N Moroney, USA)	The TC report has been completed and sent to the Central Bureau for final editing and balloting.
8-02 Colour Difference Evaluation in Images (M R Luo, UK)	An interim report is being prepared by the Chairman which will outline progress to date and an experimental plan for the ongoing work of the TC.
8-03 Gamut Mapping (J Morovic, UK)	The TC report has been completed and sent to the Central Bureau for final editing and balloting.
8-04 Adaptation under Mixed Illumination Conditions (N Katoh, JP)	A second draft of the TC report has been prepared and will be released to the TC for review.
8-05 Communication of Colour Information (R Buckley, USA)	A first draft of the TC Report has been prepared.
8-06 Image Technology Vocabulary (J Schanda)	The Chairman has been collecting terminology for the report.
8-07 Multispectral Imaging (P Herzog, Germany)	The TC was formed in 2002. It held its first meeting in November of that year. The TC is still formulating a plan of work.

7. REPORTERSHIPS IN PROGRESS

NUMBER TITLE

STATUS

8-03 Potential Interaction between CIE and IEC TA2	One report was prepared for the 2000 Division meeting.
--	--

H Ikeda (JP)	
--------------	--

8. DIVISION WEBSITE AND COMMUNICATIONS

During the quadrennial, the Division website was created so that most Division documents, reports, membership lists, contact details and circulars are readily available to Division members worldwide at any time. The web site is hosted on the web server of the Canon Development Americas, Inc. at the URL:

<http://www.colour.org>

T Newman (Division Director)
June 2003

CIE TC 8-02
Colour Difference
Evaluation in Images

Ronnier Luo

CIE TC8-02

Terms of Reference

To study, develop and recommend methods to derive colour differences for images

CIE TC8-02

Membership (17)

Chairman: R Luo (UK)

P. Alessi (US)	O. Da Pos (IT)
M. Fairchild (US)	G. Field (US)
J. Gibson (US)	B. Hill (DE)
R. Hunt (UK)	D. MacDowell (US)
M. Lo (Individual)	M. Mahy (Belgium)
B. Rigg (UK)	M. Stokes (US)
K. Takemura (JP)	J. Uroz (SP)
S. Viggiano (US)	

CIE TC8-02

TC 8-02
Deliverables

- A TC 8-02 Technical Report *Methods for deriving colour difference images*
- A collection of available experimental data sets
- A ring test to assess a set of printed images between different sites
- To recommend a colour difference formula with weights for individual colour difference components and an option on spatial filters

CIE TC8-02

Progress

- TC report V3 *Methods for deriving colour difference in Images*
 - Implementation of spatial filters as an worked example
- Ring test
 - Preparation of a set of printed images
 - Visual assessments at the University of Derby
 - Visual assessments at HP (Barcelona)
 - Experiment at FujiFilm, Japan to be completed on 15 July.
 - Experiment at HP (Boise), USA to be completed by Mid. August.

CIE TC8-02

Schedule

- Complete the TC8-02 technical report *November 2003*
- Complete the ring test *September 2003*
- Complete the data analysis + Results *November 2003*
- To propose a standard method including *February 2004*

- ☒ Test images
- ▲ Colour difference formula
- ▲ Spatial filters

CIE TC8-02

Next Meeting

CIC11 conference, US, November, 2003

CIE TC8-02

Report from
CIE TC 8-07 — Multi-spectral Imaging
to
CIE Division 8 Meeting, June 30, 2003

The new TC 8-07 was approved by the CIE Board of Administration at the beginning of November 2002. The first meeting was held on November 12, 2002 at the Color Imaging Conference, Scottsdale, AZ

At this meeting it was decided to begin work with a survey of the existing data formats for multispectral images, to specify the requirements of a general data format, and to define a new such data format, based on the knowledge gained before. Extensions of existing image formats such as TIFF are taken into account as well as defining a new format.

Information on existing data formats have been submitted by 4 groups, and the details are currently being reviewed. It is planned to hold the next official meeting at the upcoming Color Imaging Conference, Scottsdale, this year, and to be able to discuss about first draft proposals of such a data format at the meeting.

It is also planned to hold a further official TC meeting at the 6th International Conference of Multispectral Color Science, which is to be held as part of the 2nd CGIV conference, Aachen, Germany, April 5--8 2004.

Dr. Patrick Herzog
Color AIXperts GmbH
Rottstrasse 19
52068 Aachen, Germany
Tel: +49-241-4410617
Fax: +49-241-47033919