



Inter-Society Color Council News

Issue 440

July-August 2009

Reflections from Rochester

The 78th Annual Meeting of the Inter-Society Color Council was held in Rochester NY on June 7, 2009, in conjunction with the 25th Anniversary of the Munsell Color Science Laboratory (MCSL) on June 8. Both meetings took place on the campus of Rochester Institute of Technology. By most accounts, both days were highly successful in



ISCC President Maria Nadal presents Godlve award to Roy Berns

terms of the quality of presentations and the networking opportunities. In spite of the economic downturn, we were able to attract a superb array of speakers and approximately 60 attendees. A full account of the meeting will be published in a future issue of CR&A. For me personally, the highlight of the weekend was the tour of MCSL Monday night. Over the years we have had many tours and open houses at MCSL, but we have never experienced such an interested and knowledgeable group. The questions, discussions, and interactions went well past the scheduled time, and it is safe to say no one, host or guest, went away without learning something.

I wish to thank Mike Brill (ISCC) and Roy Berns (MCSL) for the extensive hard work defining the technical programs. I also thank the administrative and logistics team: Cynthia Sturke, Val Hemink, and Michelle Seger. These folks worked hard behind the scenes to make my job much easier. I now pass the torch to David Hinks, general chair for the 2010 meeting at NC State. I look forward to working with David and his team, and I hope you all look forward to another great meeting next year in sunny North Carolina.



Bill Michels and Brandon May exploring the displays during the MCSL tour

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*David Wyble
RIT Munsell Color Science Laboratory
Chair, 2009 Annual Meeting*

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Member News**AATCC Color Workshop**

AATCC will hold a color management workshop September 30 - October 1, 2009 at the AATCC Technical Center in Research Triangle Park, NC. Industry color experts will discuss all facets of color and color management and address participants' color questions. Participants will learn basic color principles; effect of lighting on color; how color choices affect cost, fashion, durability, and dyeing reproducibility; how to organize and manage color data; how to implement a digital color program with suppliers; how to control shade from concept to production, and much more. Break out sessions will provide some hands on participation and discussion opportunities. The sessions will focus on illumination and observer issues, sample analysis and measurement technique, creativity with trends and virtual development, color formulation, production evaluation and control, and how to do the right color right.

For a list of speakers and complete program details click on www.aatcc.org/programs/workshops/colormgt.cfm.

Call for Papers: ANTEC 2010

The Society of Plastics Engineers has announced that it is accepting submissions of technical papers for SPE's ANTEC™ 2010 Technical Program of the Color and Appearance Division. ANTEC™ 2010 will be held in Orlando at the Marriot World Center on May 16-20, 2010. The deadline for submitting an abstract is September 4, 2009 and the deadline for the final paper is November 13.

Any paper related to the color and/or appearance of plastic will be considered.

For more information, please see specad.e-xyn.com/index.php?navid=124.



HUE ANGLES

(send contributions to mbrill@datacolor.com)

At the recent “MCSL at 25” symposium, Nathan Moroney from HP Labs showed us a “book with 5000 authors” comprising color names printed in colors that denote their synonyms. The 5000 authors were contributors to his on-line color thesaurus. Now Nathan says more about...

Color and Thesauruses

Is the color “zaofulvin” synonymous with “orpiment” or “smalt”?

The 1911 edition of *Roget's Thesaurus*¹, which early on attempted to cluster color names, has an answer. As you can see from Table 1, “zaofulvin” and “orpiment” are synonyms.

But if a thesaurus is “a resource to group words according to similarity”² then how are we to judge the similarity of words, and particularly of color names? Kilgarriff² summarizes the contrasting methods of manual creation (e.g., for *Roget's Thesaurus*) with the automatic extraction from corpora or large collections of machine-encoded text. He also emphasizes that, besides grouping words according to similarity, a thesaurus should also indicate how frequently each word is used.

The ISCC-NBS color dictionary³ significantly advanced the grouping of color names by providing about 300 name categories for over 7,500 color names taken from 13 different earlier color dictionaries and vocabularies. This work partitions Munsell color space for the core vocabulary and maps it to the larger collection of earlier color-name collections. This is a hybrid approach that merges multiple manual efforts into a single manual or expert framework.

Modern efforts at thesaurus creation through automatic extraction are making progress, but experiments with nine similarity metrics show⁴ that much more work is needed. Some of the challenge is to have a large enough collection of text for analysis. However, size alone is not the solution. For instance, the very large *Moby Thesaurus*⁵ returns “pineapple” and “pear” as synonyms for “orange”, thereby apparently including the fruit meaning with the color-name meaning.

An alternative approach is the direction construction of a specific color naming corpus using the World Wide Web. For the past eight years, I collected over 35,000 color names from over 5,000 online volunteers. Each volunteer named seven randomly generated colored patches displayed on a white background. The colors were selected from a uniform red, green and blue sampling of what was at the time the “web-safe” palette for lower bit-depth displays. Of these 35,000 color names, many are used repeatedly. Assuming an imposed minimum of three participants to provide a specific color name, the program derives over 600 color names. Using these names as an initial collection, it computes synonyms by finding the closest color names in a corresponding color space. It also finds the color names that are closest to the inverses in hue and lightness as possible color antonyms. Finally, because the data are collected from thousands of participants, the program infers the relative frequency of use. In this way, we created a color thesaurus that is closest to an aggregate or collective clustering of colors across a large number of English speakers.

This data is formatted as a web-based color thesaurus,⁶ which has been well received by online users. It has served almost 200,000 color names to date — although zaofulvin and orpiment are not included.

Nathan Moroney, Hewlett-Packard Company

(1) Peter Mark Roget, *Roget's Thesaurus* (1911), Project Gutenberg edition, www.gutenberg.org/etext/10681, retrieved May 2009.

Continued on page 4

Table 1. Some color synonyms from the 1911 edition of *Roget's Thesaurus*.

White	Black	Gray	Brown	Red	Green	Yellow	Purple	Blue	Orange
Niveous	Atramentous	Favillous	Casteneous	Anotto	Verdine	Orpiment	Gridelin	Bice	Gild
Canescent	Fulginous	Cinereous	Fuscous	Realgar	Copperas	Zaofulvin	Heliotrope	Zaffer	Ocherous
Lactescent			Minium		Luteous		Smalt		

Continued from page 3

(2) Adam Kilgarriff, "Thesauruses for Natural Language Processing", *Proc. Natural Language Processing and Knowledge Engineering*, p. 5-13, (2003)

(3) Kenneth L. Kelly and Deane B. Judd, *The ISCC-NBS Method of Designating Colors and a Dictionary of Color Names*, National Bureau of Standards Circular 553, (1965).

(4) James R. Curran and Marc Moens, "Improvements in Automatic Thesaurus Extraction", *Unsupervised Lexical Acquisition: Proceedings of the Workshop of the ACL Special Interest Group on the Lexicon (SIGLEX)*, Philadelphia, Association for Computational Linguistics, pp. 59-116, (July 2002).

(5) *Moby Thesaurus* – online interactive version from dict.org, <http://www.dict.org/bin/Dict?Form=Dict3&Database=moby-thes>, results retrieved May 2009.

(6) *The Online Color Thesaurus* - http://www.hpl.hp.com/personal/Nathan_Moroney/color-thesaurus.html.

Robert W.G. Hunt Awarded OBE

Dr Robert W.G. Hunt was awarded an OBE (Officer of the Order of The British Empire) in the Queen's birthday honors list published on Saturday 16th June.

The citation says:

"For services to the Field of Colour Science and to young people through Crusaders."

The Order of the British Empire is awarded in recognition for a distinguished regional or country-wide role in any field or achievement or service to the community, or to notable practitioners known nationally.

ISCC awarded the Godlove award to Dr. Hunt in 2007 for

"His many seminal contributions to color science and color metrology, for his development of models of color appearance and for his efforts towards the education of generations of color scientists and technologists."

See the Jul/Aug 2007 issue of the ISCC Newsletter for the complete citation and his acceptance speech.

Frederick Tyler Simon 1917-2009



Frederick Simon

Frederick Tyler Simon passed away at his home on February 16, 2009, at the age of 91. Fred was born in Pittsburgh PA, and is survived by Irene, his wife of 62 years. He is also survived by his daughters Karla Simon of Annapolis MD and Frances Simon of Greenville SC, two grandsons, and his sister. Fred was educated at Carnegie Mellon University,

Philadelphia Textile Institute, Charleston University, and Marshall University. His career began at Union Carbide as a chemist before joining the faculty of Clemson University in 1968 as the Sistine Professor of Textile Science. He later became Professor Emeritus of Textile Science.

Fred contributed to the field of color science both by his innovative solutions to problems of industrial color measurement, and by his training of numerous graduate students. Fred's industrial legacy includes the Simon-Goodwin color charts for color identification, the two-mode method for simplifying the measurement of fluorescent samples with a single monochromator spectrophotometer, the 555 method of shade grouping according to tolerances in three parameters ($DL^*a^*b^*$ or $DL^*C^*H^*$), industrial color standards, fluorescent color matching, and many other projects. His later interests led him to graphic arts applications, also at Clemson University. Fred's human legacy includes individuals today working in academic and industrial settings in a variety of color-related tasks.

Fred could sometimes be prickly with students and colleagues, as many of us who worked with him can attest. There were rewards for working with him also, and he left a lasting mark on the industry. The last time I visited Fred and Irene was at their home in Clemson in December 2007. Fred was lamenting that squirrels had overrun his yard, and his pellet gun was broken. By happy coincidence, my then 10-year-old son had optimistically and stealthily packed two pellet guns into my car, and soon he and Fred were off in pursuit of the squirrels, looking like two Elmer Fudds. (The squirrels were clearly not in any danger.)

Ann Campbell Laidlaw

Leo M. Hurvich 1910 – 2009

Dr. Leo M. Hurvich, professor emeritus of psychology, died in New York City April 25, at age 98.



Leo M. Hurvich

Working as a team and co-publishing since 1945 (and marrying in 1948), Dr. Hurvich and his wife Dorothea Jameson, who predeceased him in 1998, made major contributions to our understanding of how we perceive color and of how our visual systems operate. They were elected to major honorific societies including the National Academy of Sciences and the American Academy of Arts and Sciences, received many awards (including the ISCC's Godlove Award in 1973), and published numerous joint as well as individual articles and books.

After receiving his PhD from Harvard's psychology department in 1936, Dr. Hurvich worked there until 1947, then at the Color Technology Division of Eastman Kodak. In 1957, he returned to academia, first in the psychology department of New York University (until 1962) and then at the University of Pennsylvania (until retiring as professor emeritus in 1979). He also was a visiting research professor at Columbia University (1971) and at the Center for Advanced Study in the Behavioral Sciences (1981).

When Dr. Hurvich and Professor Jameson began investigating color vision at Eastman Kodak, the dominant theoretical idea was the Young-Helmholtz



Dorothea Jameson

trichromatic theory, whereby the wavelength composition of light is encoded by three separate classes of cone photoreceptors. The essential features of this trichromatic theory were worked out by the mid-19th cen-

ture, and it successfully explained how mixtures of primary colors can mimic the appearance of arbitrary lights and provided the basis for color reproduction technologies.

They found, however, that trichromatic theory did not give a good account of how colors appear, and so revived and modernized what had been seen as an alternative proposal, namely that color processing relies on three opponent visual channels each of which signals mutually exclusive perceptual response states (red versus green, blue versus yellow, and white versus black for the three channels respectively). They devised an ingenious hue cancellation experiment to quantify the properties of the opponent channels.

In a series of papers of remarkable rigor and scope, they developed an opponent-process model that provides a unified account of normal human color vision and of deficits in color vision that had previously gone unexplained. The model explicitly coupled the opponent-color channels to the cones of trichromatic theory, thus clarifying the complementary nature of what had previously been viewed as competing ideas. Their behavioral work was supported by the discovery of color-opponent cells in fish (by G. Svaetichin) and subsequently in monkeys (by R. DeValois). Their theoretical framework guided a generation to characterize further the opponent-color processes inferred from behavioral measurements, and to identify the neural substrates for these processes.

"Although he retired in 1979, Dr. Hurvich remained active in writing and conference participation until about the turn of this century. His 1981 book, *Color Vision*, provides a comprehensive treatment of the field that is still in wide use, and the impact of his and Professor Jameson's contributions will remain with us for much longer," said his friend, Dr. Julian Hochberg.

Dr. Hurvich is survived by many friends and by the children for whom he and his wife had been appointed guardians.

Memorial donations may be made to the Center for Constitutional Rights, 666 Broadway 7th floor, New York, NY 10012.

Scenes from the ISCC and MSCL June Meetings



Dave Wyble, ISCC meeting Chair and Cal McCamy



Robert Hunt and Mark Fairchild



Phil Hunter, Nickerson Award Winner



Ellen Carter, Rolf G. Kuehni and Joy Turner Luke



Rob Buckley, ISCC past president, and Alan Robertson



Maria Nadal, President ISCC, Ann Laidlaw and Cynthia Sturke, ISCC Office Manager



Call for Papers:
Joint Meeting of
ISCC/CORM



Lighting in Artistic, Commercial, and Retail Spaces

Dates: Oct. 13-14th, 2009

NIST Green Auditorium, Gaithersburg MD

The Council for Optical Radiation Measurements and the Inter-Society Color Council would like to announce a joint meeting entitled “Lighting in Artistic, Commercial, and Retail Spaces” to be held on October 13-14, 2009 at the Green Auditorium at NIST. The conference will be applications-based and looks to draw a field of experts from the fashion, commercial, and conservation (museum lighting) fields as well as general experts in the field of lighting.

Sessions are planned on the following topics:

- *Use of Lighting in Artistic and Commercial Spaces*
This session will explore the effects of lighting in museum and retail applications. An important aspect of this is the relationship between the lighting, the materials, and color rendering of the sources with perception by human observers.
- *Psychophysical Effects of Lighting*
This session will examine the relationships between the physical dimensions of lighting and humans’ visual perception, performance, and other psychological attributes. Presentations may include basic laboratory studies as well as more naturalistic investigations.
- *Measurement of sources in situ*
This session will cover the science and metrology of ambient light in the field. The goal will be to understand the measurement of physical light sources in non-laboratory environments and ultimately to relate this understanding to the applications in the first two sessions.

Presentation are being solicited for these and closely-related topics. Please submit one-page abstracts in MS Word or PDF to either of the technical contacts listed below by August 14. We anticipate presentations to be 30 minutes in length.

The conference will feature tours of the NIST facility, including the new room-sized spectrally-tunable lighting facility for the psychophysical evaluation of lighting. Following this meeting will be meetings of CIE-USA and CIE-Canada, in the same venue. CIE/USA and CIE Canada will hold their Technical conference (Thursday Oct 15) and administrative committees (Friday Oct 16).

Check ISCC or CORM web sites for updates and more details.

Submit abstracts by **August 14, 2009** to either of the technical contacts:

ISCC
Dr. David Wyble
Munsell Color Science Laboratory
(585) 475-7310
wyble@cis.rit.edu

CORM
Dr. Art Springsteen
Avian Technologies LLC
(603) 5262420
arts@aviantechnologies.com

Color Research and Application IN THIS ISSUE, August 2009

We open this issue by saying farewell to another color scientist and friend Frederick T. Simon. Fred was very involved with the textile industry and our first articles come from that industry.

Ali Moussa, Daniel Dupont, Daniel Steen, and Xianyi Zeng have been studying the influence of the incidence angle of illumination and the structure of textiles on the color produced. In “Multi-Angle Study on Colour of Textile Structures” they discuss modeling the reflectance factor as it changes with the various textile structures and the angle of illumination. They look at illumination angles ranging from near specular to far from the specular angle.

One of the most important characteristics of a textile in determining its quality is the overall uniformity of its appearance. This is sometimes called levelness. While color can be measured objectively with instrumentation, the common practice for evaluating color levelness is based on the visual assessment of a single or multiple observers. Sometimes this process is merely a pass/fail decision, but other times color levelness is rated on a numerical system. In “Determination of Dyeing Levelness Using Surface Irregularity Function” Melih Günay describes objective evaluation of the levelness of a series of dyed fabrics. He used a surface irregularity function derived from analysis of digital images of the fabrics.

Moving from textiles to plastics in “On the relationship between color, gloss, and surface texture in plastic” Sofie Ignell, Ulf Kleist, and Mikael Rigdahl modeled the effect of texture on gloss and color in plastics used in the automobile interiors. They found that change in color caused by increasing the surface roughness could be predicted in a satisfactory manner using a model, which had been developed for xerographic printing paper, but also used previously in the plastic industry.

Humans first categorized colors by a hue name. In the 1960s Berlin and Kay proposed eleven universal colors by name. Presently, computer vision segmenting or separating parts of an image into categories, or both, are important tasks. First segmentation was done by gray scale or lightness evaluations. However, separation by color is also used and widely reported. In our next article, “Linguistic color image segmentation using a hierarchical Bayesian

approach” T. E. Alarcón and J.L. Marroquín report on their image segmentation method, which combines the categorizing of colors with the Bayesian technique. The color segmentation method calculates a probability vector and determines the intensity attributes of light and dark for each found color category. The segmentation method allows one to obtain an edge map, which may be used in a filtering process that preserves the perceptually salient borders in an image. Although they used the Berlin and Kay color categories, the method can be adapted to use other color vocabularies.

Light emitting diodes or LEDs are replacing incandescent or fluorescent lighting in all sorts of applications because of their low energy use. However, they are quite different than the more traditional light sources, especially because they often have quite narrow bands of radiant energy. The Color Rendering Index (CRI) has been used as a measure of the quality of the color that can be seen under a particular lighting system. The CRI rating is usually printed on the package to help the consumer when deciding on which bulbs to buy. LEDs tend to have low CRI, but people wonder if the color rendering will be sufficient for their use. Sophie Boissard and Marc Fontoynt undertook studies to determine acceptability and preference for LED lighting. In “Optimization of LED-based light blendings for object presentation,” they report on experiments where observers had to match the halogen and fluorescence rendering on specific targets such as a color chart or a painting. The observers were also asked to rate the difference between the LED rendition and the other and to express their preference. They found LEDs not only might be acceptable, but could be preferred. Also, they found that the CRI did not adequately express the rating the observers found.

In modern architecture large area glazing adds an impressive look to commercial and residential buildings. However, in these buildings it is useful to have what is sometimes called “smart windows.” Electrochromic windows (EC) allow dynamic change of their transmission properties and are able to respond appropriately to different external environmental conditions by controlling the amount of light and heat passing through them. In our next article, “Color rendering properties of the light modulated by a switchable device,” Marta Klanjšek Gunde, Jure Ahtik, Gorazd Golob, and Urša Opara Krašovec report on the analysis of the variability of the visible light cross-

ing such a switchable EC devices and consequences of this effect on the color rendering in the interior.

For our last article in this issue Esther Perales, Francisco M. Martínez-Verdú, Valentín Viqueira, Jesús Fernández-Reche, José A. Díaz and Joan Uroz discuss the “Comparison of color gamuts of paper with same printing technology.” They studied the relationship between the colorimetric properties of different types of paper and their color reproduction capability on an ink jet printer. While they found that there was no relationship between the paper properties such as whiteness and the color gamut that could be produced on the paper, the color gamut volume was the greatest with glossy papers. There was a linear correlation between minimum lightness (or maximum blackness value) and the color gamut volume.

We close this issue with two publications briefly mentioned and a meeting report. John Haikin reports on the ISCC & IS&T Joint Symposium on Black and White. There are two new CIE publications **184:2009 Indoor Daylight Illuminants** and **CIE S 014-5/E:2009 Colorimetry - Part 5: CIE 1976 $L^*u^*v^*$, Colour Space and u' , v' Uniform Chromaticity Scale Diagram**, both of which are described briefly.

Ellen Carter

Editor, Color Research and Application

ISCC Welcomes New Members

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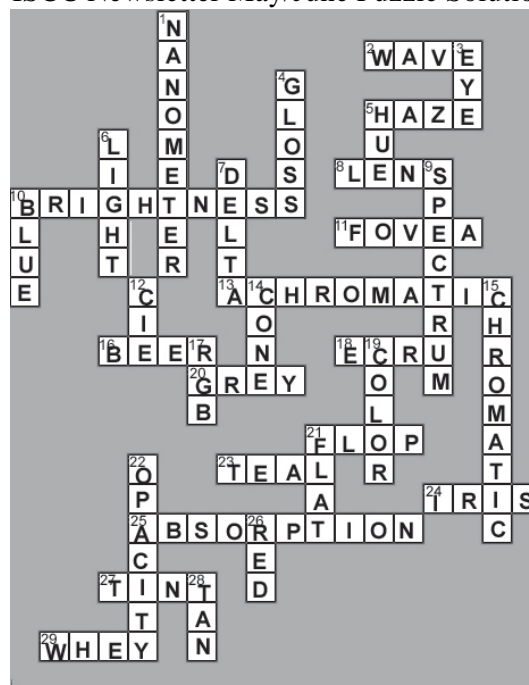
Puzzle Feature

The May/June Puzzle Feature is an achromatic cryptoquote. Each letter stands for another. Under the quote is the author's name and work.

**ASKS PTCTK,
BHNYTRCSL JQ
ASFHRHV, FHL
BHFCCRSL GREZ
LSORHRES OTKA, PFH
NYSFI ET F NTBC RH F
EZTBNFHL LROOKSHE
GFQN.
TNPFK GRCLS**

Quote submitted by Cynthia Sturke

ISCC Newsletter May/June Puzzle Solution



A. H. Munsell Color Diary Available Online 1899-1918

The Munsell Color Science Laboratory has made the A.H. Munsell diaries available online at www.cis.rit.edu/mcsl/online/munsellidiaries.php. All of volumes A and B are presented in PDF files in approximately twenty page increments. The index pages list the names of people mentioned in the diaries. There is no subject index, but if you would like to create one, MSCL states that it will gladly publish it here.

The text from the cover sheet in the diary binders is reproduced below from the web page

“The diary hereby made available is one kept by A. H. Munsell during the years in which he was developing both the Munsell color system and apparatus and charts by which to explain it. A typewritten copy was made at the Munsell Color Company in the years 1920-23 from 6 volumes of a handwritten diary kept by Professor Munsell. Drawings and sketches were all hand-traced, and handwriting was inserted where corrections or additions were made in the original. Volume A covers the period 1899 through May 1908; volume B, May 1908 through 1918.

In 1939 the Inter-Society Color Council, with permission from the Munsell family and company, depos-

ited a bibliofilm negative of this typed material with the American Documentation Institute, their Document No. 1307. Early documents of this Institute now filed with the photo-Duplication Division of the Library of Congress, Washington, D.C., from which photoprints of microfilm positives may be ordered.

This copy of the Munsell Diary is one of three photocopied by Hunter Associates Laboratory in the spring of 1973 from the original typed copy loaned to Dorothy Nickerson by the Munsell Color Company. The three copies are filed with Miss Nickerson, the Rochester Institute of Technology through Milton Person (these copies are now at the Munsell Color Science Laboratory), and the Hunterlab library.

Reports of the development and application of the Munsell Color Systems since 1918 are available in the two historical papers by D. Nickerson: 1940, *Journal of the Optical Society of America*, 30, 575-586; 1969, *Color Engineering*, 7, 42-51.

Hunter Associates Laboratory, Inc.
Fairfax, VA. 22030
June, 1973”

Publications Available from ISCC Office

ISCC 76th Annual Meeting Program and Abstracts, ISBN 978-1-4243-4273-0 \$25.00*

Color and Light by Fred W. Billmeyer Jr. & Harry K. Hammond, III. Authorized reprint from: ASTM Manual 17, Copyright 1996, ASTM International, 100 Bar Harbor Dr., W. Conshohocken, PA 19428.

\$5 ea or 20 copies/\$50.00

Demystifying Color by Bob Chung, 11 pages. Discusses and explains ten myths about color.

\$5 ea or 20 copies/\$50.00

ISCC 75th Anniversary Commemorative CD and Pin \$30*

Guide to Material Standards and Their Use in Color Measurement (ISCC TR-2003-1) \$50*

*Plus shipping and handling

Advertising Policy

The ISCC advertising policy for the ISCC News is as follows: Pre-paid color-related advertising will be accepted 30 days in advance of the publishing date. The rates are:

\$100 business card-size \$250 1/4 page

\$500 1/2 page \$1,000 full page

The editor reserves the right to determine the acceptability of the advertising. A 20% discount is available for a yearly contract.

Issue # 440

Jul/Aug 2009

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All submissions must be in English. Please submit materials by the 15th of each even numbered month. Materials submitted later may be printed in the following issue.

CALENDAR

Please send any information on Member-Body and other organization meetings involving color and appearance functions to:

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2009

- Aug 11-14** **CGIV09, Computer Graphics, Imaging and Visualization Conference**, hosted by Tianjin University, Tianjin China, www.graphicslink.co.uk/cgiv09/
- Sep 27-Oct 2** **AIC 11th Congress**, Sydney, Australia, Organizer: Colour Society of Australia, Contact: Nick Harkness, www.aic2009.org
- Sep 29-Oct 1** **Color and Food: From the Farm to the Table, AIC Interim Meeting**, Mar del Plata, Argentina, Organizer: Grupo Argentino del Color, Contact: María L. F. de Mattiello gac@fadu.uba.ar.
- Sep 30-Oct 1** **AATCC Color Management Workshop**, AATCC Technical Center, Research Triangle Park, NC, www.aatcc.org/programs/workshops/colormgt.cfm.
- Oct 13-14** **ISCC/CORM Special Topics Conference on Lighting in Art, Commercial and Retail Spaces**, National Institute of Standards and Technology, Gaithersburg, MD, ISCC - 703-318-0263, www.iscc.org; CORM - www.cormusa.org
- Oct 15-16** **CIE-USA and CIE-Canada technical and administrative meetings**, National Institute of Standards and Technology, Gaithersburg, MD
- Oct 18-20** **2009 CAD RETEC**, SPE Color & Appearance Division, Hyatt Regency, Savannah, Georgia, specad.e-xyn.com/index.php?navid=121
- Nov 9-11** **Seventeenth Color Imaging Conference**, The Society for Imaging Science and Technology cosponsored by the Society for Information Display (SID), Albuquerque, New Mexico, 703-642-9090, www.imaging.org
- Nov 13-17** **CMG 2009 Fall International Conference**, New Orleans, Louisiana, www.colormarketing.org/Visitors.aspx?id=1232&
- Nov 15-17** **IES Annual Conference**, Illuminating Engineering Society, Seattle, Washington, www.ies.org

2010

- Jan 20-22** **ASTM E12, Color and Appearance**, Embassy Suites Hotel; Ft. Lauderdale, FL, www.astm.org.
- Mar 14-17** **TAGA 62nd Annual Technical Conference**, The Horton Grand Hotel, San Diego, California, www.printing.org/taga
- May 16-20** **ANTEC™ 2010**, Society of Plastic Engineers, Marriot World Center, Orlando, Florida, specad.e-xyn.com/index.php?navid=124
- May 23-28** **SID 2010 International Symposium, Seminar, and Exhibition**, Washington State Convention and Trade Center, Seattle, WA, www.sid.org/conf/sid2010/sid2010.html
- Jun 14 - 18** **CGIV 2010: 5th European Conference on Colour in Graphics, Imaging, and Vision**, Society for Imaging Science and Technology, Joensuu Yliopisto and University of Eastern Finland, www.imaging.org

ISCC Sustaining Members

Avian Technologies	www.avianttechnologies.com	603-526-2420
BYK-Gardner USA	www.bykgardner.com	301-483-6500
Color Communications, Inc.	www.ccicolor.com	773-638-1400
Datacolor	www.datacolor.com	609-895-7432
Hallmark	www.hallmark.com	816-274-5111
Hewlett-Packard Company	www.hp.com	650-857-6713
Hunter Associates Laboratory, Inc.	www.hunterlab.com	703-471-6870
IsoColor Inc.	www.isocolor.com	201-935-4494
Pantone, Inc.	www.pantone.com	201-935-5500
Xerox Corporation	www.xerox.com	585-422-1282

ISCC Member Bodies

American Association of Textile Chemists and Colorists (AATCC)
American Society for Testing and Materials International (ASTM)
American Society for Photogrammetry & Remote Sensing (ASPRS)
The Color Association of the United States, Inc. (CAUS)
Color Marketing Group (CMG)
Color Pigments Manufacturing Association (CPMA)
Council on Optical Radiation Measurements (CORM)
Detroit Colour Council (DCC)
Federation of Societies for Coatings Technology (FSCT)
Gemological Institute of America (GIA)
Graphic Arts Technical Foundation (GATF)
Illumination Engineering Society of N. America (IESNA)
International Color Consortium (ICC)
National Association of Printing Ink Manufacturers (NAPIM)
Optical Society of America (OSA)
Society for Information Display (SID)
Society of Plastics Engineers, Color & Appearance Div. (SPE)
Society for Imaging Science and Technology (IS&T)
Technical Association of the Graphic Arts (TAGA)

**Mark your calendars for the
 Joint Meeting of ISCC/CORM
 Lighting in Artistic, Commercial and Retail Spaces
 October 13-14, 2009, Gaithersburg, Maryland**

See Page 7 of this newsletter for a "Call for papers."