



Inter-Society Color Council *News*

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**Mark your calendars for the
ISCC/FIT Conference
Color and Design
October 22-24, 2004
Fashion Institute of Technology
Campus
New York City, NY**

July/August 2004

President's Column

It is my pleasure and honor to be writing my first President's Column as your new ISCC President. I am thankful to my predecessor, Danny Rich for his hard work, commitment and leadership over the past two years. It has been a challenging period for many professional organizations but we have weathered this financial storm and the ISCC has continued to attract new members, to provide exciting annual meetings and special topic programs and to respond to the changing needs of our membership. The ISCC has reached a new milestone in its history – the Newsletter is now distributed electronically. The feedback that we have received to-date to this new format has been very positive.

This issue of the Newsletter provides highlights from our recent annual meeting, held May 10-12 at NIST, Gaithersburg, in conjunction with our member-body, the Council of Optical Radiation Measurements (CORM). This meeting was highly successful, in large part due to the tireless efforts of our Program Co-Chairs, Dr. Mary McKnight and Dr. Maria Nadal, our Interest Group Chairs, Milt Hardt (IG 1), Mr. Gary Regulski (IG 2), Ms. Georgia Kalivas (IG 3) and our new Poster Session Chair, Dr. Karen Braun. The overall technical content of the meeting was outstanding and attendees gained first hand knowledge of the significant new advances in measurement science for color and appearance.

The ISCC Executive Board of Directors is now working actively on the arrangements for several exciting events planned over the next two years. Our 2004 special topics meeting on "Color and Design" will be held October 22-24, at the Fashion Institute of Technology/ SUNY in New York City. Our 2005 Annual meeting will be held in Cleveland, April 24-27th, and feature a special Symposium on "Automotive Color Issues", Chaired By Mike Henry, President of the Detroit Colour Council. We also have a special topics meeting in 2005 on "Precision and Accuracy in the Determination of Color in Imaging", November 11-12, following the annual IS&T-SID Color Imaging Conference in Scottsdale, AZ. Mark these event dates on your calendar!

Preparations have also begun for our Diamond Jubilee Meeting in 2006 celebrating our 75th Anniversary as an organization. This also marks the 75th anniversary of the 1931 Standard Colorimetric Observer. To commemorate this special occasion, we are planning a memorable meeting with CIE Division 1 to be held in partnership

Continued on page 2

*Continued from page 1***ISCC EXECUTIVE OFFICERS**

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with the Canadian National Committee of the CIE in the spring of 2006. Please stay tuned for further developments. We hope to include a special proceedings volume, as well as an archival record, and to co-host a CIE Special Symposium on the 1931 Observer.

So you can see that we have a full and exciting program of meetings covering the color gamut from fundamental color science, to practical applications in industry, to the sublime world of art and design. If you have ideas for future meetings – venues, themes or invited speakers - please feel free to drop a line to the ISCC Office. We love to hear from our members! Enjoy your summer and I look forward to seeing many of you at these upcoming events.

Joanne Zwinkels, National Research Council

Color Measurement Principles and the Textile Industry Workshop

AATCC's annual Color Measurement Principles and the Textile Industry Workshop will be held on October 12 - 13 at the AATCC Technical Center in Research Triangle Park, N.C. The program, aimed at operator level personnel, will cover basic color theory, visual and instrumental color measurement and practical applications. Registrants will be involved in hands-on participation in sample preparation, strength calculations, reflectance and transmittance measurements, shade sorting, shade formulation, and color difference measurements.

The following topics will be addressed:

- Color and Appearance Technology
- Instrumentation for Color Measurement
- Spectrophotometric Transmittance Measurement of Dyestuffs in Solution
- The Many Shades of White
- Dyestuff Strength Determination
- Color Difference
- Shade Sorting
- Color Communication

For additional information, either contact Kim Nicholson, P.O. Box 12215, Research Triangle Park, N.C. 27709-2215; telephone 919-549-3535; fax 919-549-8933; or email nicholk@aatcc.org or see <https://www.aatcc.org/eseries/Source/Meetings/cMeetingProcessSearch.cfm>.

Calling All ISCC Members

To reduce publication costs and minimize increases in the ISCC dues, the ISCC is still offering you an option to receive your newsletter via email as a pdf file. Many members are receiving the newsletter electronically.

If you also want to receive the newsletter electronically, please contact the ISCC Office with your up-to-date email address at (iscc@compuserve.com), call (703-318-0263) or fax (703-318-0514) your choice to the ISCC Office ASAP. Of course, you still have the option to receive your newsletter in hard copy format.

Introduction of Lou Silverstein for Macbeth Award

The Macbeth Award was established in 1970 in memory of Norman Macbeth. It is presented biannually to a member, or former member, of the ISCC for recent important contributions in the field of color. The recipient of the Macbeth Award this year is an expert in display technologies relating to color. Louis D. Silverstein, founder and chief scientist of VCD Sciences, Inc., is today being recognized for his contributions to color rendering through liquid-crystal technology in cameras and displays. He has developed liquid-crystal-based cameras and filters that correct for chromaticity wander in liquid-crystal displays. Earlier he designed the advanced cockpit color CRT display systems for the Boeing 757/767 aircraft and developed visual simulation methods for color liquid crystal displays.

I have known Lou for about ten years, starting with our involvement with early SID/IS&T Color Imaging Conferences, and through editorial board meetings of Color Research and Application. During those years, I saw his influence in any display-related activity in which I became involved. When I joined the Sarnoff-vision-model team, Lou had been a team collaborator on a video engineering and optimization system (VIDEOS for short) that simulated human visual response to a flat-panel display. Among other things, the project spawned a much-used coffee mug with the inscription, "Someday, the world will be flat." Later, I had the pleasure of working directly with Lou to create a "Common Flat Panel Display" standard for the U.S. Army. We had to devise specs for a display that would operate in light environments from the darkest night to direct sunlight, allowing enough viewing angle for several people in a tank to see the display simultaneously, and hardened to the rigors of desert and jungle warfare. And the colors had to be right, over the whole screen. Lou grounded the effort in the sanity of real



Lou Silverstein Receives MacBeth Award

engineering and human limitations. The effort also led to a new color metric, which I described at the present meeting.

Lou brings to a problem, deep understanding of its many facets. He knows what makes a liquid crystal contort, how to make it send light of the intended color in the intended direction, and how to make sure the images produced by such light can be seen in conditions for which the signal can save lives. Rarely has a color technologist had so important an impact, or so enriched the perspective of his fellow workers.

I now introduce the 2004 ISCC Macbeth Award recipient, Lou Silverstein.

Michael H. Brill, Datacolor



Ralph Stanziola Receives Nickerson Award

Introduction of Ralph Stanziola for Nickerson Award

Ralph has been active in the Council for many years. He cochaired with Alan Rodrigues the very successful annual meeting in Princeton in 1992 that celebrated the 25th anniversary of the AIC, he cochaired the joint meeting with Jim Kaiser and the Detroit Colour Council in Detroit in 1994 on Color & Quality and most recently co-chaired the very successful Williamsburg Conference on Industrial Color Problems held at his alma mater, Philadelphia University.

He was instrumental in setting up the Education Interest Group along with Roland Connelly and Vivian Smith when it would give tutorials and demonstrations on color technologies. He was also the first chairman of the Industrial & Applied Color Interest Group and organized several well attended sessions.

Danny Rich, Sun Chemical

ISCC 2004 Meeting Scenes



Joanne Zwinkels Receives
Presidents Gavel from Danny Rich



ISCC Banquet



Shanbhag Receives IG1Poster Award from Braun



ISCC/CORM Reception

Successful and Lively Poster Session at ISCC 2004 Annual Meeting

The ISCC 2004 Annual Meeting, Gaithersburg, MD, in May marked the return of a very lively poster session. The session, chaired by Karen Braun (Xerox), included 10 posters ranging in topic from a color graphic design project (Erika Nielsen, Fashion Institute of Technology) to a tool for gauging observer metamerism with textiles (Pramod Shanbhag, Clemson University). Eunbae Moon (Open Cyber Univ.) and Jiwon Han (Moon Color Res. Inst.) presented a poster examining color sensitivity to digital content through a category scaling experiment. Karen Braun presented an algorithm for adjusting skin tones toward a preferred region by squeezing colors in hue.

The remaining posters dealt with aspects of color measurement. Danny Rich (Sun Chemical) evaluated daylight simulators in one poster, and, in an adjacent poster, compared inter-instrument agreement among four instruments at two locations. Mario Noel described a new NRC gloss measurement instrument, which can be used for two different ASTM standard test methods. Jack Ladson (Color Science Consultancy) demonstrated color formulation software for a variety of industries on his laptop. Modeling of special effects colorants using gonio measurements was described by Jérôme Caron (IsoColor). Irena Fryc (Bialystok University of Tech.) demonstrated a tunable solid state source, which includes an integrating sphere containing multiple LEDs, being developed at NIST for matching standard colorimetric illuminants.

Cash prizes were awarded to student posters in each of three categories, representing the ISCC Interest Groups: Pramod U. Shanbhag for IG1: Fundamental and Applied Research; Jérôme Caron for IG2: Industrial Application of Color; Erika Nielsen for IG3: Art, Design and Psychology.

Student cash prizes will also be awarded at the ISCC Color and Design Conference, October 22-24, 2004. Abstracts can be sent to Margaret Miele at FIT, Seventh Avenue at 27th Street, NY, NY 10001-5992. Please also include proof of student status.

Karen Braun, Xerox

ISCC 2004 Annual Meeting Report

The Inter-Society Color Council held its annual meeting in conjunction with the CORM Meeting at the National Institute of Standards in Gaithersburg, Maryland from May 10th to May 14th, 2004. The topic was “Advances in Measurement Science for Color and Appearance”. The conference successfully bridged applications topics and advances in color and appearance technology. It provided members the opportunity to network with the scientific, industrial, academic and design communities.

The ISCC Awards Banquet honored Ralph Stanziola and Louis D. Silverstein. Michael Brill presented the Macbeth Award to Dr. Silverstein for his contributions to color rendering through liquid-crystal technology in electronic displays and image capture. Danny Rich, President of ISCC, presented the Nickerson Service Award to Ralph Stanziola for his committed service to the ISCC.

The ISCC portion of the conference focused on color standards.

- Interest Group I: “The Role of Standards in Color”
- Interest Group II: “Industrial Applications of Color”
- Interest Group III: “Translating Color Standards from Designer to Colorist and Back to Designer”

The speakers explored the use of spectrophotometric data to manage global color standards. The role of primary reference standards, working standards and inspiration or concept standards was examined.

Other issues that emerged were:

- The use of profiling software to manage spectrophotometer drift.
- The “goodness” of real light sources used to visually evaluate color.
- Color rendering and a better understanding of the relationships among luminance, Cap Y, DE and human vision.

A panel discussion “Understanding, Using and Communicating Standards” concluded the session. The moderator was Marcia R. Cohen, Atlanta College of Art.

The members of the panel were:

Ralph Stanziola, Industrial Color Technology LLC

Brooks G. Tippett, Pantone, Inc.

John A Darsey, Jr., Color Solutions International
Georgia Kalivas, Fashion Institute of Technology.

Some of the panel’s conclusions were:

1. Although color has become more important as a “differentiator”, international competition is resulting in a simplified color palette.
2. First decide what is visually acceptable, measure the color, then assign tolerances.

3. The three rules for successful implementation of color technology still are: Education, Education, Education.

The CORM conference highlighted four topics:

- Advances in Retroreflectance Metrology
- Haze, Gloss, DOI, and Appearance Attributes
- Advances in Color Imaging
- Fluorescence and Color-Whiteness, Brightness and Chromatic Fluorescent Materials

David Burns, 3M, presented the paper “Daytime Color of Retroreflective Traffic Control Devices: An Investigation into the Relationship between Instrumental Colorimetry in the Laboratory and Field Photometry from the Driver’s Seat.” In this paper he examined the reproducibility and repeatability of instrumental laboratory measurements of retroreflective sheeting for traffic control applications. This data was compared to the photometric properties of the traffic signs under natural daytime illumination in the field as measured from the driver’s perspective.

IsoColor’s paper, “Gonio-color matching: first results,” described the work of Dr. Jérôme Caron and Jacques Gombert to formulate special effect colors using gonio-spectrophotometric data. The results infer that the multi-flux approach can accurately describe the scatter of metallic flakes at multiple angles.

Dr. James Gardner discussed the application of uncertainty analysis to spectral measurements in the paper “Systematic and Random Uncertainty Propagation in Color Measurement.” Dr. Gardner’s approach was applied by many of the speakers to examine the various experimental effects that lead to uncertainties for both source and surface color measurements.

Erin Murphy, a graduate student, with the Munsell Color Science Laboratory at the Rochester Institute of Technology presented “A Testing Procedure to Characterize Color and Spatial Quality of Digital Cameras Used to Image Cultural Heritage”. The procedure was developed in conjunction with Dr. Roy S. Berns, the RIT Richard S. Hunter Professor in Color Science, Appearance and Technology. The procedure is being tested in an academic research laboratory and at selected American museums.

The conference location made it possible for many NIST scientists to participate. The high quality papers stimulated excellent discussions. The ISCC and CORM members were invited to tour the NIST Laboratories. Sincere thanks to the speakers and to the conference organizers for facilitating this rare technical exchange.

Margaret Stanish, Penn Color, Inc.

ISCC/FIT Special Topics Conference on Color and Design

October 22-24, 2004, New York, NY

April in Paris? Why? To search for fashion's "new black"? How Dull!

Springtime in the Rockies? It snows until June! You'll see white until you're red! What color are goose pimples, anyway?

Who needs this!? Autumn. That's the best time to enjoy color. Yes, if you like color, autumn is your season. The crisp morning air, beautiful sun-filled afternoons and cool, romantic evenings bring out all the colors. Yellows. Golds. Reds. Oranges..... Electric blue. Slime green. Bubble-gum pink. Eat-your-heart-out lavender. Banker's black. Corporate Navy. Pinstripes. No, not New England.

NEW YORK!!! Now that's one colorful place and this October it will be made even more so because the ISCC and the Fashion Institute of Technology (FIT) have combined their talents in planning a Special Topics Conference on Color and Design. One look at the conference schedule (included in this Newsletter and available on the ISCC web site) and you'll see that we are covering the gamut on color and design topics. From advertising and art to textiles and technology zealots, there's something of interest for anyone who works with color. In keeping with the ISCC's motto, "where art, science and industry meet", our speakers are culled from the ranks of artists, scientists, industry personnel and academicians. As if this weren't enough, all of this will take place on the world-renowned campus of FIT. Conference attendees will be treated to a tour of our museum and much, much more.

So mark your calendar with your favorite colored pen and come for the full spectrum conference experience!

Early registration continues until September 30, 2004. Submissions for any one of the **three poster sessions** will be accepted until September 24th.

Corporate sponsorships are always welcome.

Prof. Meg Miele, Conference Chair

Member Item: Gary Starkweather Granted Honorary Membership in IS&T

Gary Starkweather was granted honorary membership of the Society for Imaging Science and Technology for his distinguished contributions to imaging over 40 years, including inventing the laser printer. This is the highest award bestowed by the Society and recognizes outstanding contributions to the advancement of imaging science or engineering.

Gary Starkweather received his B.S. in Physics from Michigan State University in 1960, and his Masters in Optics from the University of Rochester in 1966. He has spent over 40 years in the imaging sciences and holds over 44 patents in the fields of imaging, color and hardcopy devices. He has worked for Bausch & Lomb Inc. in Rochester, NY, Xerox Corporation, where he became a Senior Research Fellow, Xerox Research Center in Palo Alto, California, and Microsoft Corporation, where he is now an Architect in Microsoft Research working on novel information hardware such as large displays. Awards he has received include the Xerox President's Achievement Award, the Johann Gutenberg Prize from the Society for Information Display and the David Richardson Medal from the Optical Society of America.

He also received a Technical Academy Award for his consulting work with Lucasfilm and Pixar on color film scanning in 1964 and was inducted into the Technology Hall of Fame at COMDEX in 2002. He has published many papers and has written a book chapter entitled "High Speed Laser Printers" for Academic Press. He is a Fellow of the IS&T as well as the Society for Information Display.

International Coatings Expo 2004

October 27-29, 2004

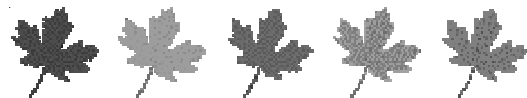
International Coatings Expo: A world-renowned event, ICE 2004 will feature the products and services of over 300 leading suppliers to the coatings and allied industries, in nearly 80,000 net square feet of exhibit space. As ICE enters its new biennial schedule, the Chicago event promises to be the largest in years, attracting attendees from over 60 countries.

ICE 2004 features a wide variety of educational programs on many topics including polymers, paints and coatings, inks, manufacturing and other coating-related topics. Two courses on color are scheduled, "Color Science and Technology" and "The Impact of Color."

The FSCT technical program will feature over 80 presentations, keyed to the theme: "Challenge - Change - Opportunity," will present the latest in cutting-edge advances.

Highlights include the prestigious Mattiello Lecture, to be presented by George R. Pilcher, of Akzo Nobel Coatings Inc.; the Technical Focus Lecture by Dean C. Webster, of North Dakota State University; as well as Poster Sessions and Exhibitor Spotlight presentations.

For complete program information and the latest updates, see the FSCT website, www.coatingstech.org.





Inter-Society Color Council / Fashion Institute of Technology
 Color and Design Conference
 October 22 - 24, 2004, New York, NY

- Friday, Oct. 22:**
- 6:00p.m. Registration/Wine & Cheese Reception
 Poster Session I
Learning Our Lessons - Color Applications in Education
- 6:30p.m. Opening Remarks
Prof. Margaret Miele, Conference Chair
Dr. Joyce Brown, President of FIT
Dr. Joanne Zwinkles, President of ISCC
- 7:00p.m. Invited Talk: Valerie Steele, “**RED**”
- Saturday, Oct. 23:**
- 8:00a.m. Registration & Continental Breakfast
- 9:00a.m. ***Color in Clothing and Textile Design***
 - Dr. Lisa Koenigsberg, New York University
 - Dr. Desiree Koslin, Fashion Institute of Technology
 - Dr. Ruth Rubinstein, Fashion Institute of Technology
- 10:30a.m. Poster Session II: ***Color in Research and Industry***
- 11:30a.m. ***Cultural Influences on Color & Design***
 - Prof. Harumi Hotta, Fashion Institute of Technology
 - Dr. Yuniya Kawamura, Fashion Institute of Technology
 - Ms. Margaret Walch, Color Association of the United States
- 1:00p.m. Lunch
- 2:00p.m. ***Color, Art and Visual Effects***
 - Prof. Marcia Cohen, Atlanta College of Art
 - Mr. Calvin McCamy, Invited Speaker
 - Ms. Joy T. Luke, Studio 231
 - Ms. Carol Steen, Artist & Co-founder of the American Synesthesia Assn.
- 4:00p.m. Tours of FIT’s Color Lab and Museum
- Sunday, Oct. 24:**
- 9:00a.m. Continental Breakfast
- 9:30a.m. ***Color & Design for the Consumer***
 - Ms. Puja Gangwal, m&m™ Division of Master Foods, inc.
 - Dr. Anat Lechner, Stern School of Business
 & Ms. Leslie Harrington, LH. Color
 - Prof. Odeda Rosenthal, East Carolina University
- 10:45a.m. Poster Session III: ***Exhibit of Student Work***
- 11:45a.m. Student Poster Award Ceremony
- 12:00p.m. Panel Discussion: ***Color & Design Allies or Enemies?***
 - Ms. Noha Edell, Adobe™, inc.
 - Mr. Craig Lowy, Designer & Director
 - Ms. Valerie Myers, Microsoft™, inc.
- 1:15p.m. Lunch
- 2:30p.m. ***Technology and the Future of Color and Design***
 - Ms. Karen Gaskins, Datacolor, inc.
 - Prof. Holly Henderson, Fashion Institute of Technology
 - Mr. Jack Ladson, Color Science Consultancy
- 3:45p.m. Closing Remarks

Color Research and Application

In This Issue, August 2004

Our issue is quite diverse this month and seems to move in pairs. The issue begins with two articles on new ways to look at ideas we might already know, the first in the realm of color appearance and the second on principal components. Then we move to two articles concerning color matching functions; two articles on sensory evaluation of color; and two articles on color preferences. As usual we carry only one article in our industrial applications section, this month about photography on wood. We also include several book reviews, meeting reports and items about new journals, publications, and organizations.

In several of the In This Issue columns over the past few years, I have talked about how an observer unconsciously assumes the quality of the light hitting an object. This decision affects the observer's perception of white and her perception of the object's color. Authors, Prasit Cunthasaksiri, Hiroyuki Shinoda, and Mitsuo Ikeda discuss this in detail. They label the concept - "recognized visual space of illumination" or "RVSI." In the article, "Recognized Visual Space of Illumination: A New Account of Center-Surround Simultaneous Color Contrast," they introduce the concept, discuss how it explains several visual phenomena, and describe experiments that show how to change the degree of the effect.

Last year, Michael H. Brill's short communication entitled, "A Non-PC Look at Principal Components" [See Vol. 28:69-71, 2003] pleaded for researchers who were using principal component analysis to identify whether the principal components in their analyses were centered around the zero or the mean vector. The distinction highlights a question of how to use mean-centered principal-component eigenvectors as proxies for the linear basis functions derived from a zero-centered analysis. Also, how can a result with a mean vector be compared to another result without the mean? In "Principal Components of Reflectances" [See Vol. 29:104-110, 2004], Hugh S. Fairman and Michael Brill exercised the mean-centered method, acknowledging but not answering the above questions. Now, in "Principal Components Applied to Modeling: Dealing with the Mean Vector," James A. Worthey joins with Michael Brill to focus on the questions, with the goal of facilitating the use of principal components in color science.

Next, Arthur D. Broadbent presents "A Critical Review of the Development of the CIE 1931 RGB Color Matching Functions." He describes the development of the CIE 1931 chromaticity coordinates and color matching functions as they were developed from the experimental data of Wright and Guild. Some of the information required to execute the transformation of the coordinates was never published. Therefore, now it is not possible to verify the data and equations. In this article, Broadbent has attempted to fill in the gaps by including an appendix of the likely versions of the missing data.

Over the past twelve years, William Thornton published a series of articles in this journal challenging the CIE standard colorimetric model. [See "Toward a More Accurate and Extensible Colorimetry" Vol. 17:79-122, 162-186, 240-262 (1992),

Vol. 22:189-198 (1997), and Vol. 23:92-103 and 226-233 (1998).] Now David P. Oulton undertakes a detailed analysis of the central assumptions concerning additive color mixing. In "The Properties of Multiple CMF Determinations Using Alternative Primary Sets Part I: Evidence and Modeling," Oulton uses error analysis with an optimization model to confirm that Dr. Thornton's data represent a significant challenge to the standard colorimetric model. He also describes a methodology for confirming, measuring, and classifying any spectrally distinct super- and sub-additive effects.

Our first of two articles on color preferences looks at "Individual Differences of Unique Hue Loci and Their Relation to Color Preferences." In their research, Eriko Miyahara, Ewelina Szewczyk, Jennifer McCartin, and Kimberly Caldwell looked for correlations between the unique hues and preferred colors. Although they did find five combinations of significant correlation between a preferred color and unique hue settings, they conclude that individual differences in color appearance as measured by unique hues and color preferences as measured by asking favorite colors may not predict each other or even within a category.

Meanwhile Li-Chen Ou, M. Ronnier Luo, Antrée Woodcock, and Angela Wright have been trying to clarify the relationship between color emotion and color preference. In Part I (last issue) they looked at single colors. However, in ordinary situations colors are not seen in isolation, therefore more investigations were needed. In this issue, we have the second part of their study of color emotion and preference. "Part II: Colour Emotions for Two-colour Combinations" In this part, Ou and his co-authors seek a simple method of modeling color emotions for color combinations. As in Part I, their experiments included both genders and two cultures, Chinese and British. A three-dimensional color-emotion space was developed for two-color combinations. It used the same axes as those developed for the single colors, and showed an additive relationship in color emotions between single colors and colors in combination. Thus, they concluded that one can predict color emotions of a color pair if the color-appearance attributes of the component colors are known.

For our next two articles we move to the field of sensory testing as applied to two different applications, cosmetics and foods. In "The Use of Sensory Difference Tests to Investigate the Perceptible Colour-Difference in a Cosmetic Product," Roger Whiting, Shona Murray, Zyrene Caintic, and Kirsteen Ellison team up to examine two sensory difference tests to find out if color-difference can be treated in a similar way to other sensory phenomena, such as taste and odor. The tests studied were the "Triangle" test and the pair in the "two-out-of-five" test, each of which is easy for an untrained observer to use. In the triangle test, the observer selects the one item out of three that is different from the others. In the two-out-of-five, the observer is presented with three alike and two alike items and asked to pick out the pair. These tests are quite different from those used to develop data sets used for developing color difference equations (that usually use a grey scale or pair comparison method.). From the results shown, the authors conclude that either the triangle or

two-out-of-five test can be used for the evaluation of color difference. However the two-out-of-five test gave better correlation and thus is the preferred test.

From cosmetic products, we move to the food industry. Color is the main indicator of the quality of a large number of food products from orange juice to salmon. Often a scale is developed for a specific product. Due to differences in color and the way in which color changes as quality changes, the same scale can not be applied to multiple products. In the next article Begoña Hernández Salueña, Carlos Sáenz Gamasa, Coro Alberdi Odropzola, Santiago Alfonso Ábrego, Miguel Berroguí Arizu, and José Manuel Diñeiro Rublal describe the "Design and Performance of a Color Chart Based in Digitally Processed Images for Sensory Evaluation of Piquillo Peppers." While this chart was developed specifically for visual color quality assessment of piquillo peppers, the procedure used to create the chart can be extended to other food products.

This month's industrial application is photography on wood. It has long been known that exposure to either light or heat change the color of wood. Perhaps controlling the exposure to light and thermal energy could produce different colors and thereby create illustrations or photographs on the surface of wood. Katsuya Mitsui, Akihiro Murata, Satoru Tsuchikawa and Mitsuhiro Kohara examine this novel application in "Wood Photography using Light-Irradiation and Heat Treatment." While it is difficult to apply different heat treatment conditions simultaneously to one piece of wood, it is not difficult to vary the amount of light irradiation to different parts of a single piece of wood using films with different transmittances. With experimentation, the authors found that films with transmittances of less than 20% are suitable for printing photographs on the surface of wood, and also that heat treatment after light-irradiation makes high contrast photographs. They were able to create 4 to 7 colors that people could distinguish.

Three new books, *Colour Perception: Mind and the Physical World* by Mausfeld and Heyer, *2nd Ed. of Coloring of Plastics: Fundamentals* edited by Robert A. Charvat and *Basics of Holography* by Hariharan, are reviewed in this issue. Several new publications are briefly noted. These include: CIE Publications 156- Guidelines for the evaluation of gamut mapping algorithms, 157- Control of Damage to Museum Objects by Optical Radiation, 158 - Ocular Lighting Effects on Human Physiology and Behavior, 159 - A Colour Appearance Model for Colour Management Systems: CIECAM02 and a new national journal for India - *Journal of Colour Technology and Management* edited by Narendra S Gangakhedkar. Silva Rizzo reports on the International Congress that was held in Genoa, Italy called Color and Urban Environment - Between History and Contemporaneity. Nathan Moroney tells us about the 11th Color Imaging Conference. Announcements are also included for the upcoming Fall Vision Meeting, the 12th Color Imaging Conference and the Turkish National Lighting Congress. Finally, we hear about a new association, "ad chroma," which has been formed in France to facilitate the color language and communication.

Ellen Carter
Editor, *Color Research and Application*

AIC 10th Congress Call for Papers

Prospective authors are invited to submit original papers for presentation in any of the technical areas related to the field of colour before October 30, 2004. All papers will be reviewed by the scientific committee to ensure that the conference provides significant and timely information to its participants.

Authors will be notified of acceptance by the 15 December 2004. Upon notice of acceptance by the scientific committee authors will be sent detailed instructions for submitting extended manuscripts of up to four pages (before March 1, 2005) to be published in the AIC Colour 05 Proceedings, which will be distributed to each participant upon registering for the meeting.

The AIC 10th Congress website lists the following Symposium Topics, along with many additional program details, and registration, accommodation and other information. The website address is <http://www.ugr.es/~aic05/>.

The Symposium Topics are:

Color Vision and Ageing, Coordinator: Kastsunori Okajima, National Defence Academy Japan.

Colour Vision with Natural Images: Physics and Psychophysics, Coordinators: David H. Foster, University of Manchester, Institute of Science and Technology and Sergio Nascimento, University of Minho, Portugal.

How Do We Teach Colour Today and Tomorrow?, Coordinator: Berit Bergstrom, Swedish Colour Centre Foundation, Sweden.

Environmental Colour Design, Coordinators: José L. Caivano, University of Buenos Aires, Argentina and Leo Oberascher, Institut für Angewandte Ökologische Psychologie, Austria.

Multispectral Colour Science, Coordinator: Francisco Imai, Pixim Inc., USA.

Colour Appearance: Ordinal, Interval, & Ratio Scales, Coordinator: Mark Fairchild, Rochester Institute of Technology, U.S.

Evaluation of Image Quality, Coordinator: Ronnier Luo, University of Leeds, UK.

Computational Colour Constancy, Coordinator: Graham Finlayson, University of East Anglia, UK.

Photoreceptors and Colour Vision Mechanisms, Coordinator: Françoise Viénot, National Museum of Natural History, France.

Art and Colour, Coordinator: Yves Charnay, National Superior School of Decorative Arts, France.

Colour Image Capture, Devices and Media, Coordinator: Markku Hauta-Kasari, University of Joensuu, Finland.

Colour and Psychology, Coordinator: Osvaldo da Pos, University of Padua, Italy.

CALENDAR

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

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11491 Sunset Hills Road, Reston, VA 20190
703-318-0263 tel 703-318-0514 fax
iscc@compuserve.com website: <http://www.iscc.org>

2004

- July 25-28** **IESNA Annual Conference**, Illumination Engineering Society of North America, Marriott Waterside Hotel, Tampa, FL, <http://www.iesna.org/>
- August 7-8** **First Symposium on Applied Perception in Graphics and Visualization**, Co-sponsored by and co-located with ACM SIGGRAPH, Los Angeles, California
- Sept 9** **Detroit Color Council**, Panel Discussion on Correlation of Numeric and Visual Readings in Plastics and Textiles, MSU Management Education Center, Troy, MI
- Sept 13-17** **AATCC's 2004 International Conference & Exhibition**, a co-located event with ATME-I 2004, Palmetto Expo Center in Greenville, SC, http://www.aatcc.org/ice/gen_info.cfm
- Sept. 15-17** **CIE Expert Symposium on Image Acquisition and Display**, Budapest, Hungary
- Sept 19-21** **2004 CAD RETEC**, "Plastic Coloring Issues and Trends," Marco Island, FL, Sandra Davis, Chair, <http://specad.org/meetings/2004retec/index.htm>
- Oct 1** **CMG's Canadian Regional Meeting**, in conjunction with IIDEX/NeoCon, Toronto, Ontario, Canada
- Oct 4-6** **Color Cosmetics World Summit 2004**, Hotel Concorde La Fayette, Paris, FRANCE, Email: dmaiore@intertechusa.com, or www.intertechusa.com
- Oct 10-14** **OSA, Frontiers in Optics 2004/Laser Science XX**, Rochester Convention Center, Rochester, New York, <http://www.osa.org/meetings/annual/>
- Oct 12-13** **AATCC Color Measurement Principles and the Textile Industry Workshop**, Technical Center in Research Triangle Park, NC, contact Kim Nicholson, 919 549-353, email nicholk@aatcc.org, <https://www.aatcc.org/workshops/colormeas.cfm>
- Oct 22-24** **ISSC Williamsburg Conference**, Fashion Institute of Technology, New York, New York, iscc@compuserve.com
- Oct 13-15** **NAPIM 2004 Technical Conference**, Pheasant Run Resort and Spa, St. Charles, IL, <http://66.95.150.74/>
- Oct 27-29** **FSCT, ICE 2004, "Challenge – Change – Opportunity,"** McCormick Place North, Chicago, IL, www.coatingstech.org
- Oct 29-Nov 2** **CMG's Fall International Conference**, Rancho Mirage, California
- Nov 2-5** **AIC 2004 Interim Meeting**, Porto Alegre, Brazil, Contact: José Luis Caivano, jcaivano@fadu.uba.ar
- Nov 9-12** **IS&T/SID, CIC12 12th Color Imaging Conference - Color Science, Systems & Applications**, The SunBurst Resort, Scottsdale, AZ, <http://www.imaging.org/conferences/cic12/authors.cfm>

2005

- April 7-11** **NAPIM Convention** - Hyatt Coconut Point, Bonita Springs, FL, <http://www.napim.org/>
- April 26-29** **IS&T Archiving Conference**, Radisson Hotel Old Town, Alexandria, VA, <http://www.imaging.org/conferences/archiving2005/>

CALENDAR, Continued

- Apr 29-May 3** CMG's Spring International Conference, Baltimore, Maryland, USA, <http://www.colormarketing.org/visitors/cmgevents/cmgevents.htm>
- May 8-13** AIC 05 Granada, 10th Congress of the International Colour Association AIC Colour 05, Conference and Exhibition Centre, www.ugr.es/local/aic05
email: eurocongres@eurocongres.es
- May 12-21** CIE Divisional and Technical Committees Meetings, Lighting in the XXI Century, Leon, Spain, email: leon05@ceisp.com
- Nov 11-12** ISCC/IS&T Special Topics Meeting, "Precision and Accuracy in the Determination of Color in Imaging," Scottsdale, Arizona, <http://www.iscc.org>

Publications Available from ISCC Office

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

Proceedings - 9th Congress of the International Colour Association, AIC Color 01 Rochester, Allan Rodrigues, Editor, papers given at technical sessions.

..... \$75*

Guide to Material Standards and Their Use in Color Measurement (ISCC TR-2003-1). The Guide, developed by ISCC Project Committee 51, provides an introduction to material standards and their use for the standardization of color measuring instruments.

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

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

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Flex Products, Inc.	www.colorshift.com	707-525-7337
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Color and Design Conference

October 22 – 24, 2004, New York, NY

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Registration Fees include Continental Breakfasts and Wine and Cheese Reception

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