Inter-Society Color Council *News*

# Issue 409 Contents



# May/June 2004

## President's Column

As I am writing this column, the 2004 annual ISCC conference is winding down. We had a good turn out and the presentations and arrangements were been superb. The security has been tighter than usual but the NIST security staff have been very helpful.

This is my last column as president of the Inter-Society Color Council. I write this column with mixed feelings. I have very much enjoyed my tenure even though the environment in North America two years ago was very uncertain. The ISCC has managed to weather this storm. Through good fiscal management and diligent planning the Council has moved from a small annual operating loss to a small annual operating surplus. This surplus allows the Council to provide the services you have come to expect from us.

As I passed the gavel to Joanne Zwinkels at the annual Awards Banquet, I realized that she and our new president-elect, Rob Buckley, have many ideas and plans for the future. I look forward to assisting them as Past-President and chairman of the Nominating Committee. This means that you may be hearing from me in the future as I look for candidates for our Board of Directors and Officers.

I hope that you are starting to get excited about our fall "Williamsburg-like" meeting, at the Fashion Institute of Technology / SUNY in New York City. This meeting is to be held October 22 - 24 of this year. More information can be found in this Newsletter and on the www.ISCC.org website.

Please mark your calendars for the 2005 AIC quadrennial meeting to be held in Granada, Spain next May. Also do not forget that we have another fall special topics meeting in 2005 following the annual IS&T – SID Color Imaging Conference in Scottsdale, AZ. This meeting will focus on procedures required to achieve accurate and precise color measurements in various forms of imaging.

*Danny Rich, Datacolor*

**Mark your calendars for the ISCC/FIT Conference**

**Color and Design**

**October 22-24, 2004**

**Fashion Institute of Technology Campus**

**New York City, NY**

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# New ISCC Officers

**Dr. Joanne Zwinkels** is the new ISCC President. She is a senior research officer with the Institute for National Measurement Standards, National Research Council of Canada (NRCC). She obtained her PhD in Physical Chemistry from the University of Alberta (1983) with specialization in the infrared optical properties of solids. She joined NRCC in 1984, to work in the fields of spectrophotometry and gloss and in 1991 was appointed the Head of the Photometry and Radiometry Group. She has developed new instrumentation, procedures, and reference standards, for high-accuracy spectrophotometry, spectrofluorimetry and gloss, and her current research activities involve the development of a versatile reference goniospectrophotometer for gloss measurements at different standard geometries. She is active in standards organizations and committees, such as CCPR, CIE and ISO, and professional societies such as ISCC, CORM and OSA. She is the Canadian delegate to the CCPR, the NRC liaison to CORM, the Vice President of the Canadian National Committee of the CIE, the Canadian member for CIE Division 2, President-Elect of the ISCC, a past member of the ISCC Board of Directors, the Chair of a CIE technical committee on fluorescence measurements, and a member of several CIE and ISO committees on the characterization of spectrophotometers, geometric tolerances for colorimetry, practical daylight simulators and optical properties of paper.

**Robert R. Buckley** was elected to the Office of President-Elect. Rob is a Research Fellow with the Xerox Imaging & Services Technology Center in Webster, NY. He earned two bachelor's degrees - one in electrical engineering from the University of New Brunswick, the second in psychology and physiology from the University of Oxford, which he attended as a Rhodes Scholar - before receiving his doctorate in electrical engineering from the Massachusetts Institute of Technology. Since joining the Xerox Palo Alto Research Center in 1981, he has held several management and individual contributor positions within Xerox corporate research. He has been involved in all aspects of color image processing, specializing in color data interchange, color printing and the development of formats and standards, and has several patents in color imaging. He has led sections of the JPEG2000 and TIFF-FX standards activities and chairs the CIE Division 8 Technical Committee on the Communication of Color Information. Rob has been active in the IS&T/SID Color Imaging Conference since its inception and will be the General Co-chair of the 2004 conference. Rob was on the ISCC BOD from 2000 to 2003, and was the BOD liaison for the AIC 2001, which the ISCC hosted in June 2001 in Rochester, NY.

**Mr. John McCann,** McCann Imaging was elected to continue as Secretary.

**Mr. Hugh Fairman** was elected to continue as Treasurer.

## ISCC Elects New Directors

Ms. Britt Nordby, Degussa Corporation, Dr. Frank O'Donnell, Sherwin-Williams Company, Cleveland, OH, and Dr. Michael Vrhel, ViewAhead Technology, were elected to three-year Board of Director terms (2004 – 2007).

**Britt Nordby** is the Technical Manager of Color Science for Degussa Corporation, a manufacturer of pigment dispersions for the coatings industry, where she oversees a wide range of color science-related activities for the company's Architectural & Industrial Colorants Business Lines. These include managing the Corporate Color Laboratory, providing technical support to customers, and the marketing of color systems for point-of-sale. She received her B.S. degree in Color Science from Philadelphia College of Textiles and Science and has since been involved in various color-related industries such as plastics, textiles, computer and coatings. Her interests include improved color matching techniques, new color display methodologies, color management and reproduction. Britt is currently a member of IS&T, SPE, FSCT, as well as the ISCC, where she served as Chairperson for Interest Group II (Industrial Applications of Color) for the past 4 years.

**Frank O'Donnell** is a Division Scientist with The Sherwin-Williams Company.. He has worked for Sherwin-Williams for the past fifteen years. Ten years in the Automotive Finishes Division and five in their Consumer Group. In both divisions his work has concentrated on color test methods and computer color matching. Prior to working at Sherwin-Williams he worked at Diconix Inc. where he developed ink-jet inks and worked on digital imaging. Frank graduated from Manchester University U.K. with a Bachelor's degree in Chemistry in 1973. He obtained his Masters degree in education in 1974 and taught high school for five years. In 1979 he emigrated to the U.S. He studied Color Science at Rensselaer Polytechnic Institute where his research advisor was Dr. Fred Billmeyer Jr. He graduated with his doctorate in 1984. Frank has been a member of ISCC for more than twenty years and was Vice Chair of Interest Group I from 1998 to 1999 and Chair from 1999 to 2000. Frank has published and presented papers on such diverse topics as appearance and print quality.

**Michael Vrhel** is currently the Senior Scientist at ViewAhead Technology in Redmond, Washington. He graduated from Michigan Technological University with a B.S. in electrical engineering in 1987. In 1989, he received an M.S. degree in electrical engineering from North Carolina State University. In 1993, he received a Ph.D. in electrical engineering from North Carolina State University. During his Ph.D. studies he was an Eastman Kodak Fellow. From 1993 to 1996, Michael was a National Research Council, Research Associate at the National Institutes of Health (NIH) Bethesda, Maryland, where he researched biomedical image and signal processing problems. In 1996, Michael was Senior Staff Fellow with the Biomedical Engineering and Instrumentation Program at NIH. From 1997 to 2002, he was the Senior Scientist at Color Savvy Systems Limited, Springboro, Ohio where he developed color device characterization software and low-cost color measuring instrumentation. He obtained two patents at Color Savvy Systems and has several pending. Michael has published over 40 refereed journal and conference papers. He is a Senior Member of the IEEE, and a member of the SPIE. He is currently serving as a Guest Editor for the IEEE Signal Processing Magazine, Special Issue on Color Image Processing. He was a Conference Session Chair for ICIP-2002, ICIP-2000, and SPIE Wavelet Applications in Signal and Image Processing IV 1996.

## Calling All ISCC Newsletter Readers

To reduce publication costs and minimize increases in the ISCC dues, the ISCC is bringing the newsletter up to speed with the rest of the world and offering you an option to receive your newsletter via email as a pdf file. Many members have already elected to receive the newsletter electronically.

If you also want to receive the newsletter electronically and have not already contacted the ISCC Office with your up-to-date email address, please do so immediately and confirm your desire to join the "electronic wave" (sounds like a new dance). However, you still have the option to receive your newsletter in hard copy format. Please email (iscc@compuserve.com), call (703-318-0263) or fax (703-318-0514) your choice to the ISCC Office ASAP!

We also welcome in ideas you, as members, have for future Color Conference Topics. Please feel free to voice your ideas to an ISCC Board Member or Officer or the ISCC Office at any time. We value your input.

Have a colorful summer!

*Cynthia J. Sturke*
*ISCC Office Manager*

# New ISCC Publication Announcement

## ISCC Guide to Material Standards and Their Use in Color Measurement

After several years of updating by ISCC Project Committee 51, the new revision of ISCC's *Guide to Material Standards and Their Use in Color Measurement* (ISCC TR 2003-1) is now available for purchase from the ISCC office, at a price of $50 plus shipping and handling. (Please fax or mail the order form below.)

As the Table of Contents shows, the Guide provides an introduction to material standards and their use for the standardization of color measuring instruments. It defines and describes various types of material standards and gives procedures for their use in assessing instrument parameters affecting color measurement. It then discusses desirable properties of material standards, and provides tables of commercially available standard materials, material standards, and standardization services for color measurement. Typical standardization procedures are then provided as examples, and the Guide closes with a Glossary and an Annotated Bibliography. See the listing of the Table of Contents

Initiated by ASTM E12 in 1957 and continued by ISCC Project Committee 22, the document has a history of more than four decades. The last revision of the *Guide to Material Standards* was ISCC Technical Report 89-1, published in 1989. Much has changed since that time in instrumentation, available materials, and venues for obtaining and standardizing the materials. The Guide will be an important addition to any colorimetrist's bookshelf.

### Table of Contents of Material Standards Guide



## Order Form for ISCC Tr 2003-1: ***Guide to Material Standards***

Name _____

Mailing Address _____

_____

_____

Phone number _____ email address _____

Number of Copies Ordered _____ Price (at $50 each) _____ + $2.50 per copy S&H

Name on Credit Card _____

Credit Card type _____ Credit Card No _____

Expiration Date _____

Please fax or mail this form to:

**Inter-Society Color Council**
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**11491 Sunset Hills Road**
**Reston, Virginia 20190**

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## Book Review: *ASTM International Standards on Color and Appearance Measurement*

Seventh edition (2004) of the compilation of color and appearance Standards, available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, xxii + 780 pages, softbound, ISBN 0-8031-3147-X. $150 North America, $165 elsewhere. Alternatively available in CD-ROM: ISBN 0-8031-3146-1.

The *ASTM Standards on Color and Appearance Measurement* is a substantial compendium of 113 standards. Most of the standards have been revised since Edition 6, several were dropped, and some were newly incorporated. The new standards include aspects of fluorescent and phosphorescent colorimetry, multi-angle color measurement of metal flake materials, and computer communications with spectrometers. Richard Harold, the volume's Editor for more than 15 years, is again to be congratulated for his efforts.

For two taxonomic breakdowns of the standards, it is useful to read two reviews of earlier editions. Ellen Carter's review of the Third Edition [*Color Res. Appl*. **17**, 298 (1992)] explains the different kinds of standards: *standard test methods* (each a prescription to derive a specific metric for a material), *standard practices* (each deriving more than one number), *standard specifications* (criteria against which the numbers are to be compared), *guides* (series of options or instructions that do not recommend a specific course of action), and *terminology standards* (glossaries). Harry Hammond's review of the Fifth Edition [*Color Res. Appl*. **22**, 290-291 (1996)] emphasizes the differences among the originating committees within ASTM. Both these reviews are worth reading, and perhaps the material in the reviews should be incorporated in the introduction of a later edition. For the record, Hammond and I wrote separate reviews of Edition 6 in ISCC News # 387 (Sept./Oct. 2000, pp. 11-12). Whereas Edition 6 provided supplementary material on a CD-ROM, Edition 7 comprises only the hard-copy book or the CD-ROM, both with identical material. To me, the earlier option is preferable.

In my past review, I expressed concern that, being a primary consensus document, an ASTM standard has no bylines and few references. As an example of the lack of an audit trail to rationales or to more primary data, I cited the color diagram in Figure 1 of D4383 (on pavement markers), which delimits the gamuts of nominal red, green, blue, yellow, and white chromaticities. Recently, I called the ASTM to obtain a technical contact, and tracked the figure's origin to an SAE document—replete with rationale. In the ASTM, the document you see is not the whole story: the technical context is alive and well, if only one asks. This experience alleviated the concern in my last review.

I had also been concerned about the ASTM model of colorimetric properties of a visual display unit (ASTM E 1682-96)—a topic area somewhat removed from the usual purview of ASTM. My concern led to my becoming acquainted with the process of revising ASTM. standards. That process, too, is alive and well. Living documents require vigilance, and will survive as long as people care about them.

The present compendium is a good way to keep the wisdom of the ASTM at your fingertips, and is much cheaper than buying many of the standards individually.

*Michael H. Brill, Datacolor*

## Expert Symposium on Image Capture and Display, CIE Division 8

The field of Image Processing is progressing with ever increasing speed. CIE, Division 8, on Image Technology was founded in 1999 to address related issues. In September 2004, the Division will hold a symposium in Budapest at the Headquarters of the Hungarian Academy of Sciences devoted to new hardware for image capture and display from the best methods of characterizing and calibrating theses devices, to the establishment of the necessary guides and standards.

The goals of the meeting are to discuss questions of image capturing and display, with special emphasis on device modeling, multispectral image capturing and display, characterization and calibration issues, the best use of colour appearance models and gamut mapping algorithms.

The primary task of the meeting is to formulate recommendations for CIE Division 1, 2 and 8 for further action.

Accepted Symposium contributions will be pre-published for Symposium participants at the WEB site of the meeting.

For further information and Registration Forms, see http://vision.vein.hu/CIE2004

## Greens of Nature

An article by Christopher Andreae in the Christian Science Monitor, May 19, 2004 contemplates the many colors of green in nature. The author wrote, "What is the color of spring? Green, of course. A fresh, new green. Green for "go." But how many greens are there in nature? The more I look, the more I see. Green, nature's ubiquitous background, is restful and accommodating as no other color is. Its vividness in the most brilliant light isn't harsh." He continued, "There are silvery greens, earthy greens, greens so yellow that they might be yellow, so blue that they might be blue. There are grayish greens, dark bottle greens, vibrant greens, tangy greens, watery greens, juicy greens, and even dull greens."

The author noted the difficulty of reproducing these greens in paintings. "[Although] tubes of artists' paint are named in an attempt to express the various qualities and tone values of greens - sap green, earth green, emerald green, moss green, viridian. … to make paint somehow capture or convey the range of greenness we see in nature is notoriously difficult."

He concluded "Green may be the typical color of spring ... However, the colors of many spring blossoms assault us with an overdressed carnival of blatant pinks, yellows, oranges, and carmines, all clashing merrily. Without the calm greening of the world, such excesses would be florid indeed."

## IS&T/SID's 12th Color Imaging Conference

For the 12th year in a row, IS&T/SID will hold a conference for color scientists, engineers and technologists—anyone with an interest in color imaging—in Scottsdale, Arizona. This years conference, CIC 12, will be held at The SunBurst Resort from November 9 to 12, 2004 and chaired by Naoya Katoh and Rob Buckley. Two hallmarks of the CIC are its single-track format and the Interactive Poster Session, designed to encourage the exchange of ideas across specialized areas in the field.

A tutorial session will precede the conference and include a 2-day course presented by Dr. Robert Hunt on basic color science and imaging. Other tutorials will be offered on topics such as color appearance, multi-spectral imaging, spatial color vision, color displays and color management.

Confirmed keynote presenters include Dr. Cynthia A. Brewer of Pennsylvania State Univ. on "Color Research Applications in Mapping and Visualization" and Dr. Nagaaki Ohyama of the Tokyo Institute of Tech. on the "Natural Vision Project."

Paper program topics for the conference are:

Engineering Disciplines:

| | |
|---|---|
| output device | input device |
| color management | color standard |
| novel imaging product | halftoning |
| characterization | calibration |
| gamut mapping | color transformation |
| standard color spaces | illumination |

Color Image Synthesis/Analysis:

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|---|---|
| computer graphics | color rendering |
| image processing | image understanding |
| image recognition | color in machine vision |
| mathematical analysis | image quality assessment |
| multi-spectral imaging | image compression |
| high dynamic range imaging | 3-D object |
| color in culture | preferred color |

Scientific Disciplines:

| | |
|---|---|
| color appearance | color vision |
| computer vision | psychophysics |
| color constancy | color difference |
| uniform color space | chromatic adaptation |
| measurement | |

Applications:

| | |
|---|---|
| color design | architecture |
| textiles | painting |
| graphic arts | color printing |
| Internet | motion pictures |
| television | multimedia |
| digital photography | visualization |
| virtual reality | communications |
| image retrieval | digital cinema |
| archiving | projector |
| camera | scanner |
| display | printer |
| database | |

For further information, see the conference web site http://www.imaging.org/conferences/cic12/index.cfm.

## Special Topics ISCC Meeting

### Early Announcement

A Special Topics Conference (historically known as a Williamsburg Conference) will be hosted by the Inter-Society Color Council (ISCC) and the Society for Imaging Science and Technology (IS&T) November 11 & 12, 2005. The venue will be the Scottsdale, Arizona and will follow immediately after the annual Color Imaging Conference. The special topic of concern in this conference will be, "Precision and Accuracy in the Determination of Color in Imaging."

Over the past ten years there have been many advances in the analysis and modeling of the color and appearance of colored images and colored image reproduction. These models include ICC profiles, 4D profiles, gamut mapping, illuminant estimation, adaptation, multiresolution spatial comparisons, LED, OLED and general color appearance predictions. In each of these applications, the reliability of the model depends critically on the reliability of the measurements of the color stimulus functions. This conference specializes on accurate measurements of materials and scenes across the visible spectrum and over a wide range of radiances. The conference will cover the scientific techniques for photometric and radiometric measurements with special emphasis on the degree of precision and accuracy required for specific applications. Additionally, the conference will include discussion of a wide variety of practical applications, verifying the performance of instruments for these measurements and the pitfalls of inaccurate measurements.

This meeting will include keynote addresses and contributed papers that address the issues of precision and accuracy in the measurement of color for use in characterizing and profiling graphic devices such as digital printers, digital proofers, presses, scanners, digital cameras and visual display units.

The meeting is being co-hosted by the IS&T (Imaging Society) and the ISCC. If you want more information or you have some measurement data or experiences that you would like to share in a 20 minute oral presentation please contact the program chairs.


| | |
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## Weight Loss Secret

Stop second helping hunger with a blue tablecloth. Gracing your place setting with blue has been proven to suppress appetite.

The reason is that hue is found in very few natural foods.

*from First, March 2004*

## ISCC/FIT Conference on Color and Design

**October 22-24, 2004**
**FIT Campus NYC, New York**
(Preliminary Schedule)

| | | |
|---|---|---|
| **Friday, Oct. 22:** | 6:00 p.m. | Registration/Wine & Cheese Reception |
| | | Poster Session I: |
| | | Color in the Design Class |
| | 6:30 p.m. | Opening Remarks |
| | 7:00 p.m. | Invited Speaker- Valerie Steele |
| **Saturday, Oct. 23:** | 8:00 a.m. | Registration & Continental Breakfast |
| | 9:00 a.m. | Paper Presentations: |
| | | Color, Clothing and Textile Design |
| | 10:30 a.m. | Poster Session II: |
| | | Color in Research and Industry |
| | 11:30 a.m. | Paper Presentations: |
| | | Cultural Influences on Color & Design |
| | 1:00 p.m. | Lunch |
| | 2:00 p.m. | Paper Presentations: |
| | | Color, Art and Visual Effects |
| | 4:00 p.m. | Tours of FIT's Color Lab and Other Facilities |
| **Sunday, Oct. 24:** | 9:00 a.m. | Continental Breakfast |
| | 9:30 a.m. | Paper Presentations: |
| | | Color & Design for the Consumer |
| | 10:45 a.m. | Poster Session III: Exhibit of Student Work |
| | 11:45 a.m. | Student Poster Award Ceremony |
| | 12:00 p.m. | Panel Discussion: |
| | | The War Between Color & Design |
| | 1:15 p.m. | Lunch |
| | 2:30 p.m. | Paper Presentations: |
| | | Color and Design on the Computer |
| | 3:45 p.m. | Closing Remarks |

## Color Research and Application In This Issue, June 2004

We open this issue focusing on studies of human color vision. To learn more about our visual system, in particular spatial vision, researchers have methodically analyzed the influence of experimental parameters such as mean-luminance level, orientation, spatial position, temporal and spatial extent, etc. on sensitivity thresholds. Luminance level is one of the key parameters affecting detection thresholds. Two relationships have been defined: one for low mean-luminance levels, the other for high mean-luminance levels identified as the DeVries-Rose range and the Weber range. Drs. Eva M. Valero, Juan L. Nieves, Javier Hernández-Andrés and José A. García have been examining the transition between the two ranges. In our first article "Changes in Contrast Thresholds with Mean Luminance for Chromatic and Luminance Gratings: A Re-examination of the Transition from the DeVries-Rose to Weber Regions" they report on their research of the influence of mean luminance level. Their results suggest that the transition luminance may be related to the peak spatial frequency of visual mechanisms that respond to luminance and chromatic gratings.

Next we move to a short note by Rolf G. Kuehni and Rajeev Ramanath on "Comparing Observers." The color-matching functions of the CIE standard observers are aggregates of the functions of individual observers, which are assumed to be representative of the human population. This point highlights the fact that people, even those with normal color vision, see things differently. Differences in individual color-matching functions of color normal observers can result in matches for one person, which are mismatches to another person. Using an idealized metameric pair with a maximal spectral difference, one can find the transition wavelengths for that metameric pair for a given observer. Kuehni and Ramanath suggest that the transition wavelengths are a convenient tool for comparing and classifying observers. In this note, they compare transition wavelengths of real observers and of derived observers.

There appears to be a renewed interest in the phenomena of color assimilation and color induction in the literature in the last couple of years. This interest could be stimulated by requests from the imaging and display community. A better understanding of these phenomena could lead to better methods of controlling their effects. It could also lead to better models of color perception in general, because both these phenomena have not been well understood. Hiroyuki Shinoda and Mitsuo Ikeda collected data in a primary experiment that provides useful insights about color assimilation. In "Color Assimilation on Grating Affected by Its Apparent Stripe Width" they describe the experiment and the analysis of the results. In the article the authors also discuss how vergence angle affects color assimilation.

Our next article provides a transition from the articles on vision and how we see to measurement. Our perception of object color is influenced by the surface of the material. At times manufacturers use this for special advantage, say for example by adding the clear top coats on automobiles to enhance design effects, or in a lab to remove the effects of gloss on the measurement of the intrinsic color of a material. Lionel Simonot and Mady Elias are interested in another application, the preservation of art works. While a varnish layer protects the picture, it also changes the appearance of the painting. In "Change in Color Due to a Varnish Layer" they discuss what we see and how we measure the work of art. In addition to aid in restoration, they predict what the painting will look like without the varnish layer.

Moving to measurement issues, "Uncertainty Analysis for Reflectance Colorimetry" has been a major concern for the past couple of years. This is the title and subject of Edward A. Early and Maria E. Nadal's article. Quite often the discussions of uncertainty leave the colorist with more questions than answers. In particular, how is this applied to colorimetric measurements and what do we do about correlations between the measured values? In Drs. Early and Nadal's article two important concepts are stressed: the measurement equation describing the relation between signals and spectral reflectance factor and the correlations both between signals at the same wavelength and between reflectance factors at different wavelengths.

As with any new technology, along with many advantages comes a new set of challenges. This is certainly true with the increased use of digital cameras as compared with the film varieties. Some of the advantages of digital cameras over conventional ones are that one does not need film, the photographer can view, evaluate, and possibly delete photos immediately. Often this allows the chance to try again. However, digital cameras store color in a digital format, and many factors can affect how realistic the colors seem. In our next article the "Color Errors of Digital Cameras" are discussed. Joni Orava, Timo Jaaskelainen, and Jussi Parkkinen evaluate the accuracy of color reproduction with a digital camera and describe a method of reducing these errors using photo editing and mathematical corrections.

Shih-Wen Hsiao and Tsai provide new methods for determining product color and deploying that information over the Internet. They discuss the "Use of Gray System Theory in Product-Color Planning." Gray System theory may be new to the readers of this journal. It is an analysis used in such diverse fields as engineering classification and control, multi-object management systems, agricultural systems, as well as product development. In this case the term gray refers to information within a system that is partially unknown (white is known, black is unknown). The objective of gray system theory is to transform black (unknown) information into white (known) from information that is available. In other words, for systems with incomplete information or systems which contain variables with uncertain relations, the gray forecasting model or the gray relation model can be used to predict the unknown data or to measure the grade of relation from

known data. Hsiao and Tsai adopt gray relational generating and gray clustering in the evaluation of multi-colored product images. This helps the stylists pick compatible colors.

Our final article of the issue, "A Study of Colour Emotion and Preference," is really just a beginning. By just a beginning I mean that there is more to come; in this issue is "Part 1: Colour Emotions for Single Colours." Additional parts of this article will follow in the next two issues. 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 the past, studies of the emotions evoked by certain colors typically tried to reduce a large number of scales to a few factors or categories. Certain categories, "warmth" for example, emerged from many different investigations. One hypothesis is that there are universal color-emotion factors. In the present article the authors describe a psychophysical experiment to clarify the relationship between color emotions and color appearance attributes. Comparisons of the results between different groups of observers, male and female, Chinese and British are analyzed.

In this month's Communications and Comments section, Ralph Pridmore sends a discussion, "Bezold-Brucke effect exists in related and unrelated colors and resembles Abney effect." First he wants to correct the possible misconception that the Bezold-Brucke hue-shift applies only to aperture colors. Also using a colorful figure, he demonstrates the broad similarity between this and the Abney hue-shift. Take a look for yourself and let us know what you see.

We conclude the issue with two reviews, a meeting announcement and an invitation. First, Janos Schanda reviews John Hutchings's new book *Expectations and the food industry, The impact of color and appearance.* Then Margaret Miele takes a look at the video made by Graham Wilstead, *Color Concepts and the Munsell System.* Both the ISCC and CORM announce their meeting "Advances in Measurement Science for Color and Appearance" in May 2004. Finally, the CIE technical committee 8-03 invites researchers to conduct experimental evaluations of gamut mapping algorithms.

*Ellen Carter, Editor,*
*Color Research and Application*

## AIC Interim Meeting 2004: Languages

The following languages will be accepted for the AIC Meeting, "Color and Paints," to be held in Porto Alegre, Brazil, November 2-5, 2004:

For oral presentation:

English (AIC official language)

* French, German (AIC official languages)

* Portuguese (local language)

* Spanish, Swedish (two additional languages with the higher number of abstracts presented)

* Condition: The use of French, German, Portuguese, Spanish, and Swedish, will be allowed provided an English translation is projected simultaneously. It is a responsibility of the author to make and project a power-point English version. For questions and discussion after the oral presentation, we encourage the use of English. However, if the author, co-author, chair or co-chair is able to translate the questions and answers, then the other languages will be allowed for discussion.

For poster presentation:

English, French, German (AIC official languages); English is preferred.

For publication of the full papers in the Proceedings:

English, French, German (AIC official languages); English is preferred.

Note, if you chose a poster presentation because of difficulty in speaking English, you can change now to oral presentation. but you will to meet the condition described above.

For additional information, contact:

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Congress AIC Color and Paints, www.abcorpoa.org
Congreso ArgenColor 2004,
www.fadu.uba.ar/sicyt/color/congrgac.htm

## Meeting Report: Detroit Colour Council

The Detroit Colour Council's winter meeting program was Achieving and Maintaining Low-Gloss Parts.

Kurt Beyerchen of Collins & Aikman offered a supplier's perspective, covering the trend to lower gloss interior parts, its impact on perceived quality, and some of the drawbacks of using soft, low gloss materials. He discussed gloss/color/grain relationships, design and manufacturing issues, and offered recommendations to ease some of the problems we face using low gloss parts in our industry.

John Kayi of Tenebac-Graphion spoke from the perspective of a supplier of texture designs, explaining how texture affects perceived and instrumentally measured gloss. He showed diagrams illustrating the interaction of light with various types of textured surfaces.

Greg Schatko of Byk-Gardner concluded the program with an overview of the measurement geometries recommended for the characterization of low-gloss surfaces and the relationship of visual perception with instrumental measurements. He recommended procedures to use in setting gloss standards, maintaining gloss in production of parts, and in maintaining measurement instruments.

Further details are available on the DCC website at www.detroitcc.org.

*James G. King,*
*ISCC Delegation Chair*
*Detroit Colour Council*

## CALENDAR

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

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

### 2004

| | |
|---|---|
| **June 15** | **CMG's Central Regional Meeting in conjunction with NeoCon World's Trade Fair**, Chicago, Illinois. |
| **June 18-20** | **24th Center for Visual Science Symposium**, "Adaptive Representation and Control in Vision", University of Rochester, Rochester, NY http://www.cvs.rochester.edu/symposium.html. |
| **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** |
| **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 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/. |

## CALENDAR, Continued

**Apr 29-May 3** **CMG's Spring International Conference,** Baltimore, Maryland, USA, http://www.colormarketing.org/visitors/cmg_events/cmg_events.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.

..... $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:

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| **$ 100** | **business card-size ad** |
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| **$ 1,000** | **full page ad** |

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

**Issue #409 May/June 2004**

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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.

## Color and Appearance Measurement (7th Edition) Available from ASTM

The new edition of the ASTM International Standards on Color and Appearance Measurements is now available from ASTM. The new volume is over 780 pages long, an increase of 15% from the 6th edition and contains updated and new standards and test methods related to all aspects of color and appearance measurement. In all, eleven standards have been added and fifty two standards have been updated or revised in the new volume. The volume is available either in book form or as a CD-ROM.

This volume is an invaluable resource to anyone involved in the field of color or appearance metrology. See the review by Dr. Michael Brill on page 5 of this newsletter.

The volume is available from ASTM International, 100 Barr Harbor Drive, W. Conshohocken, PA 19428-2959 or at www.astm.org. The customer service number for ASTM is 610-832-9585.

# ISCC Sustaining Members

| | | |
|---|---|---|
| **BYK-Gardner USA** | www.bykgardner.com | **301-483-6500** |
| **Ciba Specialty Chemicals** | www.cibasc.com | **302-633-2042** |
| **Color Communications, Inc.** | www.ccicolor.com | **773-638-1400** |
| **DuPont Performance Coatings** | www.dupont.com | **248-583-8345** |
| **Flex Products, Inc.** | www.colorshift.com | **707-525-7337** |
| **GretagMacbeth, LLC** | www.gretagmacbeth.com | **800-622-2384** |
| **Hewlett-Packard Company** | www.hp.com | **650-857-6713** |
| **Hunter Associates Laboratory, Inc.** | www.hunterlab.com | **703-471-6870** |
| **IsoColor Inc.** | www.spc-software.com | **201-935-4494** |
| **Labsphere, Inc.** | www.labsphere.com | **603-927-4266** |
| **Minolta Corporation** | www.minoltainstruments.com | **201-529-6055** |
| **Pantone, Inc.** | www.pantone.com | **201-935-5500** |
| **PPG Industries, Inc.** | www.ppg.com | **724-274-3532** |
| **Prime-Color, Inc.** | watprime@hotmail.com | **908-272-5759** |

# 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)**
**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)**

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