



# Inter-Society Color Council News

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Number 383

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2000

## ISCC President's Report

Happy New Year! I view this report as a "time capsule", sending a message to what may be a very different world in a month or so from my date of writing. You who read this report know a lot more than I about what happened during the computer-capricious transition to the year 2000. I hope your world is peaceful and plentiful.

In this issue of the News, please read the excellent article by Cindy Brewer about the upcoming Panchromatic Conference in Savannah, GA (Feb. 19-21). As one of the chairs of the first Panchromatic Conference in 1995, I am proud to have been able to pass the standard to Cindy: she and her conference committee have organized a great meeting.

Here is a surprising piece of year-end good news: I am delighted to welcome Pantone and Hewlett Packard as new sustaining members of ISCC. We'll hear more about them in a future issue of this newsletter.

Although it is a bit premature to go into details, another Project Committee is about to emerge into the light of day. Stay tuned for more details. Also stay tuned for the ballot you will soon receive, allowing most of you the first opportunity (under the by-laws change) to vote for officers and board members.

Finally, a belated thanks to Romesh Kumar and Clariant Corporation for hosting a fine tour of Clariant just before the October Board meeting in Providence, RI. We all enjoyed seeing the process by which colorants are made. Romesh, of course, continues as our Arrangements Chair, and is also organizing the next Annual Meeting in Charlotte, NC, co-located with CPMA.

A reminder: We still have one more year in the Second Millennium to solve such problems as color constancy, color management, and color communication. Let's make this the decisive year!

*Michael H. Brill*

*30 December 1999*

## ISCC Panchromatic Conference "Color In Its Surround"

The Inter-Society Color Council (ISCC) is sponsoring the Second Panchromatic Conference. Its focus will be on color in its surround. The conference will be held in Savannah, Georgia, from Saturday through Monday, February 19-21, 2000.

In the tradition of ISCC Williamsburg and Panchromatic conferences, this meeting will foster intensive interactions within a small group of specialists from varied disciplines. This format will allow us to learn from, and build on, each other's work. We will compare neural models and appearance models, examine research methods, learn about new approaches and applications, and study the richness of using color surrounds in art and architecture. Demonstrations will help ground theoretical work in real-world surround effects.

Invited keynote talks to be presented at the conference are:

**Michel-Eugène Chevreul: From Laws and Principles to the Production of Color Plates**

Françoise Viénot, Muséum National d'Histoire Naturelle, Paris, France

**Where is the Color in Color Vision?**

Steven K. Shevell, Visual Sciences Center, University of Chicago

**Color Constancy and Color Context Effects**

David H. Brainard, Department of Psychology, University of California at Santa Barbara

**Seeing Black and White: Computation of Lightness by the Human Visual System**

Alan Gilchrist, Department of Psychology, Rutgers University

**On the Perception of Brightness and Contrast of Variegated Backgrounds**

Mark D. Fairchild, Munsell Color Science Laboratory, Rochester Institute of Technology

**Demonstration of the Effect on Colors of a Surround that Exhibits Color Assimilation**

Joy Turner Luke, Studio 231

Other papers to be presented at the conference include:

**Moving Color to Three Dimensional Space**

Anna Campbell Bliss, American Society of Interior Designers

**From Theory to Practice: A Discussion of Simultaneous Contrast in the Classroom, the Digital Studio, and in Typographic Design**

Carol Waldron and Barbara Martinson, University of Minnesota

**The Effect of Surrounds on Color Discrimination and Color Appearance**

Vivianne C. Smith and Joel Pokorny, Ophthalmology & Visual Science and Psychology,  
University of Chicago

**Simultaneous Contrast in Three Dimensional Images**

James Schirillo and Ken Perkins, Psychology, Wake Forest University

Mr. Calvin S. McCamy will make a special presentation, which includes the 40th anniversary presentation of his scientific demonstration of Land's two-color projections:

**Abridged Color Reproduction Revisited or Sleeping Beauty II.**

Late poster and demonstration entries are invited. Visit the ISCC home page at <http://www.iscc.org> to view a complete program for the conference with abstracts and biographical information on presenters. A conference registration form is enclosed with this newsletter. An online version of the form, that may be printed and mailed, is also linked to the program on the web. Please register and make your conference hotel reservations by January 10th.

## **ISCC 2000 Ballot**

Following are biographies of the candidates for Officers and Board of Directors for the ISCC. Due to the "proposed and passed" ISCC by-law change, all members of the ISCC will now have an opportunity to vote. Your ballot should be arriving in the mail shortly.

### **Candidate for Officers**

#### **President Elect - Danny C. Rich**

Dr. Rich obtained his bachelors degree in Physics from the University of Idaho in 1973. He then spent two years at Virginia Polytechnic Institute and State University in Blacksburg, Virginia. He received a Masters degree in Physics in 1977. His research involved laser optics and its application to light scattering experiments. During his studies at VPI & SU, he obtained a summer internship in the Sherwin Williams Research Center in Chicago. While there, he met Dr. Fred W. Billmeyer, Jr., who convinced him to transfer to Rensselaer Polytechnic Institute to work toward a Ph.D. in Color Science. In 1980, he completed his program of studies by defending his dissertation entitled, "The Perception of Moderate Color Differences in Surface Color Space."

He returned to the Sherwin Williams Company in the fall of 1980. In the fall of 1984, he became the Manager of Research for Applied Color Systems, Inc. in Princeton, New Jersey. In 1989, Applied Color Systems, Inc. became part of the Eichhof Group of Lucerne, Switzerland, and along with Instrumental Colour Systems in the United Kingdom and Dacolor of Switzerland, is now Dacolor International. In 1998, Dr. Rich joined the Sun Chemical Corporation to direct the Sun Chemical (GPI) Color Research Laboratory in the Daniel J. Carlick Technical Center, Carlstadt, New Jersey.

Dr. Rich has published on all aspects of color science, including visual perception instrumentation, and mathematical modeling.

He has been active in the ISCC, serving both as a director (1984-1987) and as Secretary (1990-1998).

#### **Secretary - Rich Riffel**

Rich Riffel joined the ISCC as a student member while studying under Dr. Franc Grum at the Rochester Institute of Technology in 1984. Rich subsequently graduated with an MS in Imaging Sciences from RIT in 1992 under the direction of Dr. Roy Berns. Rich is currently Product Manager Low Cost Products and Color Vision Systems at Hunter Associates Laboratories, where he is involved in low-cost spectrophotometric instrument systems and applications. He was previously associated with Accuracy Microsensors, Inc. where he developed low-cost instrumentation using LED's as primary light sources. Prior to this, he was a Research Specialist with Monsanto Chemical Company (now Solutia, Inc.) in the Resins Division. In this position, Rich was responsible for color formulation and color quality control of transparent plastics encapsulated in glass for the automotive and building industries, supporting several world-wide manufacturing and research sites. He was also Color Products Manager for the former Diano Color Products business of Milton Roy Company. Rich has served on the Finance Committee and Board of Directors of the ISCC and has also been a member of CIE and the Detroit Color Council. He lives in Herndon, VA with his wife and 4 children.

#### **Treasurer - Hugh Fairman**

Hugh joined Henry Hemmendinger as a partner in the Hemmendinger Color Laboratory in 1994. Hugh is a graduate of Princeton University, where he majored in analytical chemistry. During the early part of his career in the coating industry, Hugh specialized in exterior exposure, corrosion control, and accelerated weathering. While in the coating industry, he obtained expertise in color and appearance science. Hugh's current interest include metamerism, tristimulus integration, scotopic vision, and the study of error detection and correction in spectrophotometry, as well as in colorimetry. Hugh has been very active in the Inter-Society Color Council (ISCC), serving as President from 1990-1992, and now as Treasurer. He has also served as chairperson on numerous problem and standing committees. He was the United States representative to the AIC

from 1988 to 1992. He is also active in the American Society for Testing and Materials (ASTM), serving on committees D-1 on Paint and Related Coating Materials, and E-12 on Appearance. Currently, he is chairperson of subcommittee E-12.04 Data Architecture.

## **Candidates for Director Positions (2000-2003)**

### **Robert Buckley**

Rob Buckley is a Principal Scientist with the Xerox Architecture Center in Webster, NY. He received a BScEE from the University of New Brunswick, Canada and a MA in Psychology and Physiology from Oxford University, England. It was as a Rhodes Scholar at Oxford that Rob became interested in color. To prepare for future work in machine intelligence and robotics, he decided to study for a degree in their human equivalents, psychology and physiology, which included a tutorial on color vision that changed everything and got him hooked on color. After Oxford, he received SMEE and Ph.D. degrees in Electrical Engineering from the Massachusetts Institute of Technology where he did his graduate work on gamut compression and color image coding.

Since joining the Xerox Palo Alto Research Center in 1981, Rob has worked on color reproduction and printing, developed color and imaging standards, and managed a color systems and image processing research group. He co-authored the TIFF-FX file format standard for Internet Fax and is the Xerox Principal on the USJPEG 2000 Committee. He edited the IS&T Recent Progress volume on "Color Management and Communication." He has been active in the IS&T/SID Color Imaging Conference from its inception; Rob co-chaired the 2nd Conference and co-taught a tutorial on "Color Imaging on the Internet" at the last one. He is the chair of CIE Technical Committee TC8-05 on the "Communication of Color" and is a member of the technical program committee for AIC Colour 2001.

### **Alan Kravetz**

Alan Kravetz received his BS in Physics from Carnegie-Mellon University in 1974 and his MS in Applied Physics-Instrumentation (also from Carnegie-Mellon) in 1975. While at Carnegie, Alan worked on a navy project doing research on color center based electronic imaging guidance systems. Currently, he holds the position of Special Projects Manager for the Instrument Systems Division of Minolta Corporation in Ramsey, NJ and is responsible for exploring new avenues for the instrumentation business. Alan has over 20 years of experience in the research and development of color and light instrumentation, such as spectrophotometers, colorimeters, spectroradiometers, luminance and illuminance meters and online instruments and electronic imaging. He has worked on the development of Medical Diagnostic and Near Infrared instrumentation. Alan has also given seminars on color measurement and theory and holds several patents. Additionally, he is a Sub-committee Chairman as well as a member of several ASTM committees, ICC, TAPPI, OSA, SPIE, USNC/CIE Executive board members, and a members of the IEEE.

Alan started his career in color at Macbeth, then a Div of Kollmorgen, as a development engineer working on their first pulsed xenon spectrophotometer. After working on other color instruments including densitometers, he became involved with Near Infrared instrumentation and later Technical Manager for Medical Diagnostic Products for Macbeth's line of color based medical instruments. In 1993 he joined Minolta as Technical Manager for the Instrument Systems Division. Later he became Product Line Manager of 3-D Digital Imaging Products. Now as Special Projects Manager his responsibilities encompass new business development for both Radiometric and Reflection Instrumentation.

### **Mary McKnight**

Mary McKnight is a senior research chemist in the Building and Fire Research laboratory of the national Institute of Standards and Technology (NIST). She has worked in coatings research at NIST for

about 20 years. Currently she is leading a new multi NIST-laboratory project on predicting appearance of fabricated objects using material microstructure and formulation parameters. Previously, she conducted coatings research in the area of service life prediction.

She received a Ph.D. in physical chemistry from the University of Nebraska. Prior to her career at NIST, she was a chemist in the Avery International Research laboratory. She is a member of CORM and of ASTM E12, where she is Chairman of the Symposium and Workshop Subcommittee and Secretary of the Multi-dimensional Aspects of Appearance Subcommittee, E12.14. She is the current Chairman of ASTM D01 on paints, coatings and related materials, one of the Directors of the Society for Protective Coatings and a member of the Federation of Societies of Coatings Technology.

## **Color Science Symposium March 23-24, 2000**

AATCC is planning a Color Science Symposium to be held on March 23-24, 2000 at the Hyatt Regency in Greenville, SC. This is the second Color Symposium that is sponsored by "RA36, the Color Measurement Test Methods Committee of AATCC." The first one was in Charlotte, NC. This symposium, chaired by Ann C. Laidlaw of SheLyn Inc. will consist of 4 color sessions and 2 break out sessions. The breakout sessions will allow the participants to interact with one another and discuss issues they face in the industry.

The following are the confirmed speakers and topics to date:

**Session I: From Design through Retail - The Process**  
*Color Trends and Forecasting*  
 Carole D'Arconte, Color Portfolio  
*Dyemaker/Production/QC*  
 John A. Darsey, Jr., Darsey Color Inc.

**Session II: Lighting Issues and Concerns**  
*Color Perception*  
 Joy Turner Luke, Studio 231  
*How Bad is the Problem of Uniformity of Lighting*  
 David Hinks, NC State University  
*Color Rendering*  
 Keith Hoover, Fruit of the Loom  
*Coping with Lighting Issues*  
 Ralph Stanzola, Industrial Color Technology

**Session III: Color Communication**  
*Grouping Methods: Sorting and Tapering*  
 Robert F. Willis, Shelyn Inc.  
*Internet Issues with Color and Color Rendition on a Monitor*  
 John S. Setchell, Jr., Eastman Kodak

*Color and the Design Process*  
 Katy Chapman, Logikos LLC  
*Color Cleaver*  
 Joy Turner Luke, Studio 231

**Session IV: Color Science Technology Updates**  
*Color Vision Models*  
 Rolf G. Kuehni, Dystar LP  
*Technology Update: Closing the Loop*  
 Roland L. Connelly, Shelyn Inc.

A registration fee of \$495 (\$425 for individual and corporate AATCC members) will include luncheons, breaks and a copy of all available papers. Visit our web site at <http://www.aatcc.org> for program updates or to register online.

For additional information contact:  
 Patty Simon, AATCC,  
 P.O. Box 12215,  
 Research Triangle Park, N.C. 27709-2215;  
 919-549-3546; fax 919-549-8933;  
[simonp@aatcc.org](mailto:simonp@aatcc.org)

## Color Research & Application In This Issue, February 2000

We open this issue with "A Critical Review of Spectral Models Applied to Binary Color Printing" by David R. Wyble and Roy S. Berns. The quality of color printing used to be in the hands of skilled operators, who ran the presses and adjusted the process for optimum color. However, more and more the quality of color printing is dependent on the accuracy of the color management system for desktop publishing. How good is this color management system, how well do we understand it, and how can it be improved? These are important issues. The goal of this article is to provide an explanation of color management systems including the halftone process and the necessary information to apply color printer models as a component for device profiles within the color management system.

While the next article is not aimed at color management systems, its theme is a common one for computer-based color management systems – color harmony, and its application could be useful for color management systems. In this case, Yu-Chuan Shen, Wu-Hsiung Yuan, Wen-Hsing Hsu, and Yung-Sheng Chen team up to present a new color selection system. In "Color Selection in the Consideration of Color Harmony for Interior Design" the authors use an engineering perspective to evaluate systematically the mental characteristics of color. They then extend the system to consider color-vision deficiencies, i.e., what a color-blind, or should I say colorimetrically-challenged person sees.

From discussions in this column over the last few years, and the many articles on the Helmholtz-Kohlrausch Effect most people in the field are aware of the discrepancy observed when adding colored light. In short while the luminance of the combination of two lights would be expected to be equal to the sum of the luminances of the individual lights, we know that this is not the case. As one might guess from the name of the effect, it has been reported for over a hundred years that the luminance of the sum is less than the expected value. But an opposite or enhancement effect, i.e., the sum ex-

ceeding the expected value, has also been known for the last 30 years. In "Prediction of Experimental Results on Additivity Law Failure," Yoshinobu Nayatani and Hiroaki Sobagaki show how the current model can predict both types of effects using the identical prediction equation.

For the next article in this issue we move to an application of colorimetry in the field of health. Akira Hasegawa, Akio Motonomi, Ikuo Ikeda, and Satoshi Kawaguchi are concerned with the color of teeth. Generally when replacing a tooth, it is important not only to replace its functionality, but also to make the result aesthetically pleasing. The traditional way to match the color of a replacement tooth to those teeth still in place is by comparison with shade guides, which are used as color standards. Occasionally instrumental measurement is also used. In the study of the "Color of Natural Tooth Crown in Japanese People," the authors investigate how accurately the color shade guides represent the color of natural teeth. They instrumentally measure the teeth of a wide representation of Japanese people and compare the resulting colors with those found on a typical commercially available shade guide. It is their conclusion that new shade guides are needed at least for the Japanese population.

In the October issue, I remarked that there would be at least one more article on the general topic of color difference appearing soon, and now we have three: two articles and a note. In the first, Manuel Melgosa reports that users should find a statistically significant improvement over CIELAB with each of three color-difference metrics, CMC, BFD and CIE94. In "Testing CIELAB-Based Color-Difference Formulas," Dr. Melgosa compares the weighting functions of the lightness, chroma, and hue differences in each formula and the performance of the four color-difference metrics.

The other two actually deal with the color spaces related to color difference metrics. One of the problems common to all the modified CIELAB equations, such as CMC, BFD and CIE94, is that they do not have a color space associated with them. Although they are based initially on  $L^*$ ,  $a^*$ , and  $b^*$ , the further modifications nullify the use of that color

space. The Commission Internationale de L'Éclairage (CIE) has recognized this problem and in 1999 formed a new technical committee TC 1-55 to develop a uniform color space. Here Rolf G. Kuehni takes a first step in that process. He proposes a simple subtractive model in terms of linearly related cone response functions. Read "Uniform Color Space Modeled with Cone Responses."

In a note, Knud Thomsen says that many consider it futile to try to create color spaces that are significantly more uniform than the CIELAB space. However, you can see from the above article, Mr. Kuehni takes that challenge. As you might guess, so does Mr. Thomsen, in this note, "A Euclidean Color Space in High Agreement with the CIE94 Color-Difference Formula." Perhaps the insights from the two approaches in this issue will stimulate the work of CIE TC 1-55.

This first issue of the year also features a classical article from the field of color. "*De Affinitate Colorum Commentatio*" was written by Tobia Mayer and published in *Opera Inedita Tobiae Mayeri* in Göttingen in 1775. In this issue we have the translation, "On the relationships between colors" by Adriana Florentini. An introductory commentary is provided by Barry B. Lee, leader of the Primate Retina and Color Vision Research Group at the Karl-Friedrich Bonhoeffer Institute, which is the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany.

We conclude this issue with several items in the Communications and Comments Section. These begin with a letter to the editor from Michael H. Brill entitled, "van Trigt on von Kries: Two Counterexamples" that follows from the article "Color rendering, a reassessment" by C. van Trigt, which was published in this journal last August. "On Von Kries: A Reply to Brill" follows next. The third item, "On Geometric Relations between Scales of Small Color Differences by Witt," is a letter to the editor from Rolf G. Kuehni.

*Ellen C. Carter, Editor*  
CR&A

## ISCC 2000 ANNUAL MEETING & COLOR SYMPOSIUM APRIL 16-18, 2000

The 2000 ISCC Annual Meeting will be held in Charlotte, N.C. at the Hilton at University Place on April 16-18, in conjunction with the Color Pigments Manufacturers Association (CPMA). The program will consist of general ISCC sessions, followed by a two day symposium covering the following subjects:

**Pigments and Color Industry**

**Color Measurement**

**Environmental Aspects of Pigments**

**Color Formulations - Cost and Performance**

**New Technologies in Color**

**Computers in Color Testing**

**Color Difference and Tolerances**

**and other related Subjects**

Papers based on the above mentioned topics are invited for the symposium. Speakers will have 30 minutes for presentation followed by a 15 minute discussion.

We expect a large attendance similar to our Annual Meeting in Newport, RI where we had the last joint meeting with CPMA. It will be great time for networking where industry meets others in color field.

A block of rooms have been designated for ISCC at the rate of \$95 per night. Make your reservations early! Send abstracts to:

Romesh Kumar, Chair  
Clariant Corporation  
500 Washington Street  
Coventry, RI 02816  
401-823-2161 Fax: 401-823-2750  
[romesh.kumar@clariant.com](mailto:romesh.kumar@clariant.com)

## "It Melted the Chocolate Bars"

### *A Snippet Of Oral History*

About 30 years ago, I had the pleasure of spending an afternoon talking with Arthur C. Hardy, the inventor of the first commercial recording spectrophotometer. At the time of my visit, I was gathering data for a paper on some aspects of modern spectrophotometer design. My review of Hardy's early papers (1928-1936) brought up several questions that I hoped he could answer. Hardy's answer to one of my questions is memorable to this day.

Around 1928 Hardy built an instrument that employed 45/0 geometry. Unlike the later GE stovepipe model, which illuminated the sample with narrowband (monochromatic) light, the sample in this earlier instrument was directly illuminated by a tungsten lamp. I asked Hardy why he abandoned this direct illumination method when he developed the GE stovepipe instrument. His answer was that the direct illumination melted the chocolate bars.

Technical papers are one of our main sources of the history. Usually, they are abstractions of the real processes of R&D. They usually do not report the dead ends, dumb luck, and "ah-ha" realizations that are often part of R&D. As best I can recall, chocolate bars are not mentioned in the text of Hardy's papers, but the melting properties of chocolate had an influence on his subsequent development efforts.



### *A Proposed Oral History Project*

The Optical Society of America (OSA) has an oral history project. I proposed to the ISCC board that we start an oral history project before the resource for such a project, our older members, is no longer available. What we need to get this project started is a list of potential people to interview and people

who are willing to do the interviews. I contacted OSA and we may be able to use a modified form of their interview guidelines. Your comments and suggested interviewee names are needed to get this started. I will be traveling overseas much of the month of January. Therefore, respond directly via e-mail or letter to Cynthia Sturke at the ISCC office. A report will be given at the upcoming Williamsburg Conference in Savannah on February 19-21 and/or the Annual Meeting on April 16-18 in Charlotte.

*Dave Spooner - 12/6/99*

## The Society for Imaging Science and Technology (IS&T)

Photo-Digital industry members will get a unique opportunity to learn about the latest developments in conventional, digital and hybrid photo-image processing in an IS&T ([www.imaging.org](http://www.imaging.org)) symposium immediately preceding the 2000 Photo Marketing Association (PMA) International Convention at Bally's Las Vegas Hotel in Las Vegas, NV. The meeting is sponsored by the Society for Imaging Science and Technology with support from PMA's Society of Photofinishing Engineers. The two day conference will include many semi-technical sessions that can be easily understood by marketing and other non-technical people in both large and small amateur/professional imaging provider companies, imaging retailers and companies producing products for use in this industry. The IS&T 11th International Symposium on Photofinishing Technology will be held in Las Vegas from January 30 to February 1, 2000.

For information on program details, or to register contact:

IS&T  
7003 Kilworth Lane  
Springfield, VA, USA 22151  
703-642-9090, fax: 703-642-9094  
[info@imaging.org](mailto:info@imaging.org).

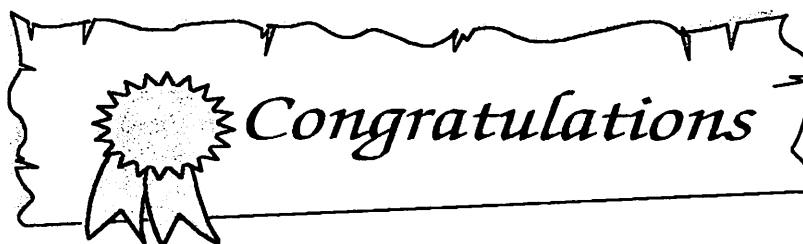
## **Brian A. Wandell To Receive The ISCC Macbeth Award**

The Inter-Society Color Council (ISCC) will honor Dr. Brian A. Wandell with the presentation of the Macbeth Award during its Annual Meeting to be held in Charlotte, North Carolina on April 16-17, 2000. 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. Dr. Wandell, a Professor of Psychology, Neuroscience and Electrical Engineering at Stanford University in Stanford, California, is being recognized for his work in color appearance, especially his spatio-chromatic models including spatial-CIELAB (S-CIELAB).

S-CIELAB measures how accurate the reproduction of a color is to the original when viewed by a human observer. The widely used CIELAB color difference equations are suitable for measuring the color difference of large uniform color targets. S-CIELAB extends CIELAB to color images that contain patterns. The S-CIELAB software is distributed freely on the internet, and it can be used by color engineers to incorporate effects of spatial pattern on color reproduction. This technology has been proven useful in machine vision and in quantifying the quality of digital half-tone printers.

Professor Brian Wandell, (<http://white.stanford.edu/wandell.html>) joined the Stanford University faculty in 1979. His training included a B.S. in Mathematics and Psychology from the University of Michigan (1973), a Ph.D. in Social Sciences from University of California, Irvine (1977), and an National Institute of Health post-doctoral fellowship at the University of Pennsylvania (1979). His research includes image systems engineering and vision science. Professor Wandell is co-director (with J. Goodman) of the Image Systems Engineering Program at Stanford. He is also co-principal investigator (with A. El Gamal) of the Programmable Digital Camera program, an industry sponsored effort to develop programmable CMOS sensors. Wandell's work in vision science uses both functional MRI and psychophysics. His vision science work includes work on the computation and representation of color and measurements of reorganization of brain function during development and following brain injury. Wandell is the author of *Foundations of Vision*, a textbook on Vision Science. Wandell won the 1986 Troland Research Award from the U.S. National Academy of Sciences for his work in color vision; he was made a Fellow the Optical Society of America in 1990, and he was given a McKnight Senior Investigator award in 1997.

Please join us in honoring Dr. Wandell at our Annual Meeting. To register please contact the ISCC Office, 11491 Sunset Hills Road, Reston, VA 20190, 703-318-0263; 703-318-0514-fax; [iscc@compuserve.com](mailto:iscc@compuserve.com); or visit the ISCC website at <http://www.iscc.org>.



**Call For Papers  
Interest Group I  
Basic And Applied Research  
Colors, Colorants, and Coloring  
Abstract Deadline-Feb. 1, 2000**

What's new in how paper, plastics, buildings, textiles, food, money or automobiles are colored? Interest Group I invites abstracts on basic or applied research on the chemistry, physics, or psychophysics of colors, colorants, and coloring, and the related issues of color durability, measurement, and safety associated with new ways of coloring things.

One-page abstracts may be submitted to either Helen Epps, Chair or Frank O'Donnell, Vice Chair no later than February 1, 2000. Authors of abstracts accepted for presentation will be notified by Feb 15.

Dr. Helen H. Epps, Chair  
Dawson Hall, The University of Georgia  
Athens, GA 30602  
[hepps@gcs.uga.edu](mailto:hepps@gcs.uga.edu)

Dr. Frank X. O'Donnell, Vice Chair  
Sherwin Williams Co.  
Cleveland Technical Center  
601 Canal Road, Cleveland, OH 44113  
[fxodonnell@sherwin.com](mailto:fxodonnell@sherwin.com)

**Call for Papers  
Interest Group II  
Industrial Applications of Color**

ISCC Interest Group II, "Industrial Applications of Color", serves to present the technical challenges and solutions that industry encounters in commercial color applications. In tying in with CPMA, a bridge between the science of color and the pigmentation of various materials is sought. The range of issues can include, but are not limited to, quality control techniques and color tolerancing, color measurement techniques, color matching, the relationship between color and other physical characteristics, as well as other color-related industrial applications.

For the Annual Meeting to be held in Charlotte, NC April 16-18, 2000, Interest Group II is soliciting contributed papers on the many industrial aspects and uses of color. To present, please submit an abstract of no more than 200 words by January 15, 2000.

Michael Stokes, Chair  
Program Mgr-Color and Imaging  
Microsoft Corporation  
One Microsoft Way,  
Redmond, WA 98052-6399  
425-705-5460 fax: 425-936-7329  
[mistokes@microsoft.com](mailto:mistokes@microsoft.com)

Britt Nordby, Vice-Chair  
Color Scientist  
Creanova Inc.  
2 Turner Place  
Piscataway, NJ 08855-0365  
732-981-5433 fax: 732-981-5033  
[bnordby@creanovainc.com](mailto:bnordby@creanovainc.com)

## **Call For Papers/Discussants For ISCC April Annual Mtg Interest Group III and Education Committee**

The Education Committee and Interest Group III are planning linked sessions on "Color in the Curriculum: The Need to Integrate Color and Technology in Education." The sessions will address the needs of industry - image production, marketing and advertising, manufacturing - for individuals trained in color, and how this need is being met by schools, colleges, and in-house training courses. A variety of perspectives are invited: from employers, artists and designers, production managers, advertising professionals, and teachers, to mention a few. Sessions will consist of presentations followed by a panel discussion. One goal of these sessions is to address how computers and digital imaging technologies have changed what artists and designers need to learn about color (see below). Anyone interested in participating should contact:

Dr. Geof Rogers, Chair, Education Committee  
Fashion Institute of Technology, Room B831  
227 West 27 Street, New York, NY 10001  
212-217-7296, [geof@matrixcolor.com](mailto:geof@matrixcolor.com)

Ms. Margaret Miele, Vice-Chair, Interest Group III  
Fashion Institute of Technology, Room 634  
227 West 27 Street, New York, NY 10001  
212-217-8449, [mielemar@fitsuny.edu](mailto:mielemar@fitsuny.edu)

### **Color Education in the Digital Era**

Color image production is changing significantly with the introduction of digital technologies, both for the creator of color images - the artist and designer, and the producer of color images - the color technician. Traditionally, many artists have worked with color from an intuitive sense - their knowledge and use of color being based on experience. Today, more and more art and design is being produced digitally. In order for the artist or the color technician to control his palette he must understand how the computer, the display, and the hard copy output and inputs produce colors, and how color is transformed between the different devices. Both the artist and the color technician require an understanding of the principles of applied color science - the psychophysics of color perception, color mixing, the measurement of color, and the use of various color spaces. There is a widespread need for a basic curriculum of applied color science - the psychophysics of color perception, color mixing, the measurement of color, and the use of various color spaces. This session on Color Education is intended to address this issue from the perspective of the teacher and developer of curriculum as well as from the industrial producer of color images and color image technology.

## **ISCC Call For Poster Papers ISCC Annual Meeting, April 16-18, 2000**

There will be a Poster Session at the 2000 ISCC Annual Meeting in Charlotte, North Carolina. The intent is to provide a vehicle that could be used by all ISCC members to share state-of-the-art color information. Whether you are an artist, scientist, industrialist, educator, student, or researcher, we are interested in hearing what is new in your area of color. The topics for this session are completely open. Each poster contribution should represent original work of a non-commercial nature, which is suitable for presentation even if the author is not present. This poster Paper Session will provide you with an excellent opportunity to present the innovative color work, that you may be doing, to color-interested colleagues attending the meeting. Please send entries, in the form of a title and abstract by March 1, 2000 to:

Yan Liu, Chair, Contributed Papers  
2202 Seaman Avenue, South El Monte, CA 91733  
(626)279-9198; Fax:(626)279-9298; [yliu@sunnyait.com](mailto:yliu@sunnyait.com)

## **Workshop On Metrology and Modeling of Color and Appearance**

**March 29 and 30, 2000**

**National Institute of Standards  
and Technology  
Gaithersburg, MD**

NIST will host a two-day multi-disciplinary workshop on measurement and modeling of color and appearance of materials. The purpose of this workshop is to provide attendees an opportunity to learn about current and anticipated needs for improved appearance measurements, new measurement and modeling developments, research aimed at improving the fundamental understanding of factors affecting appearance of materials, and predictive computer rendering based on optical scattering of objects. This workshop will also explore common needs of industry for improved measurements, modeling, and prediction of appearance parameters through panel discussions. Panel recommendations will be used to guide the direction of future color and appearance research programs at NIST. The technical program (see [http://www.nist.gov/public\\_affairs/confpage/](http://www.nist.gov/public_affairs/confpage/)) should appeal to everyone involved in color and appearance research.

Call or email Mary McKnight 301-975-6714 or [mary.mcknight@nist.gov](mailto:mary.mcknight@nist.gov) or Maria Nadal 301-975-4632 or [maria.nadal@nist.gov](mailto:maria.nadal@nist.gov) for more information.

## **News from Members.....**

Roland Connelly was elected as Regional Vice-President for the Midsouth region of the AATCC in early November. Mr. Connelly has previously served as secretary and chair of the color measurement committee, chaired both the Technical Committee on Research and the Executive Committee on Research, and was one of the original organizers of the AATCC's Color Measurement Workshop. He is also the Color Measurement Spokesman and delegation chair for ISO Subcommittee 1.

## **TAGA/VDD 4th International Printing & Research Congress**

You are cordially invited to attend the above meeting on Friday, May 26, 2000 sponsored by Messe Dusseldorf in connection with Drupa 2000, Congress Centrum Dusseldorf, Room 3, Dusseldorf - Fair Grounds, Dusseldorf, Germany.

- |          |  |
|----------|--|
| 3:00p.m. | <b>Opening Ceremonies</b><br>Chairperson of VDD, Frankfurt   |
| 3:30p.m. | <b>Technology Methods for Print Media Production (changes, challenges, and chances by digitalization)</b> Prof. Dr.-Ing. Habil. Helmut Kipphan, Heidelberg   |
| 4:10p.m. | <b>Toward Integrated Systems</b><br>Dr. Mark Bohan, Dr. Tim Claypole<br>University of Wales, Swansea   |
| 4:30p.m. | <b>Break</b><br><b>Highlights and Novelties at Drupa 2000</b><br>Kurt K. Wolf, Deutscher Drucker and Seybold Report<br><b>The Printing Industry's Future Prospects and Challenges According to the Novelties Shown at Drupa 2000</b><br>Prof. Dr. -Ing. Arved Huebler<br>Technical University Chemnitz |
| 5:10p.m. | <b>Color in Printing Media Production (methods and tools for Practical Application to control print quality within the total workflow)</b><br>Prof. Robert Chung<br>RIT School of Printing<br>Management and Science   |

At 6:00p.m. TAGA and VDD Members only are invited to board the bus to the Dusseldorf City Hall where TAGA and VDD members will be received by the Lord Mayor of Dusseldorf. There will be short speeches, a cocktail and dinner reception hosted by the Lord Mayor of Dusseldorf. (There is no charge for TAGA members to attend this special program.)

## **FSCT Issues Call for Papers ICE 2000 Technical Program**

The Federation of Societies for Coatings Technology is seeking technical papers to be considered for presentation at the FSCT Annual Meeting Technical Program, to be held at the Lakeside Center, McCormick Place, Chicago, IL, on October 18-20, 2000. Held in conjunction with the International Coatings Expo, the Federation's 78th Annual Meeting will feature a variety of program sessions on the leading technical work in the industry. The theme for ICE 2000 is "Driving Innovations."

The Annual Meeting Program Committee, chaired by Andrew Gilicinski, of Air Products & Chemicals, Allentown, PA, is soliciting presentations on the following topics:

- Waterborne Coatings
- Testing Methods
- Radiation (UV/EB) Curing
- Formulation Advances
- Manufacturing Techniques
- Equipment Advances
- Powder Coatings
- New Formulation Materials
- Other novel technical topics pertinent to the coating industry.

New for ICE 2000, the John A. Gordon Best Paper Award will be presented for the best paper contributed to the Annual Meeting Technical Program (to exclude applicants for any other award).

Please provide a 75-100 word abstract, along with contact information: author's name(s), company, address, telephone, fax and e-mail to:

Rod Moon, Director of Ed.,  
FSCT, 492 Norristown Rd.,  
Blue Bell, PA 19422; 610-940-0777;  
fax: 610-940-0292, [rodm@coatingstech.org](mailto:rodm@coatingstech.org)

The dateline for submission is January 15, 2000.  
PLEASE NOTE: Subsequent to your abstract being accepted for the competition, you will be required to submit a paper by May 15, 2000.

## **Technical Association of the Graphic Arts (TAGA 2000) April 2-5, 2000 Colorado Springs**

**TAGA announces a meeting "Metrics in  
Printing".**

You are encouraged to submit innovative technical and scientific papers for presentation at TAGA 2000. Papers should emphasize original and unpublished research and development in the graphic arts. Papers of a commercial nature cannot be accepted. Papers accepted will be published in the 2000 TAGA Proceedings hardcover book.

We hope to have the best technology paper lineup in recent years. Our interest focus this year will be on the multidisciplinary integration needs in the graphic arts industry. Indeed, a new track on applied plant systems integration is contemplated in conjunction with GCA and the R&E council.

We need lots of paper, ink, press, color, plate and proofing papers to make things work. As usual, we will have our color (colour to Tony Johnson) and ink shootouts and a fine set of tutorials.

I look forward to seeing all of you again and I particularly look forward to seeing your abstracts.

*Bill Ray*

**Pike's Peak or Bust!**



TAGA Office  
68 Lomb Memorial Dr.,  
Rochester, NY 14623-5604,  
Fax: 716-475-2250,  
or [TAGAOfc@aol.com](mailto:TAGAOfc@aol.com)

## FSCT Student Competition

Student authors are encouraged to submit entries in the 2000 Southern Society for Coatings Technology Alfred L. Hendry Award Competition.

This year's award features cash prizes to both the student author (or authors) and author's sponsoring lab. The student receives a \$1,000 cash award and expenses covering attendance at the FSCT Annual Meeting and International Coatings Expo in Chicago, IL, on October 18-20, 2000, to receive the honor and a suitably inscribed certificate for the best paper submitted for the competition. In addition, the laboratory of the sponsoring school will also receive a grant of \$500.

The competition is being administered by the FSCT Society Support Committee. Several committee members will judge the entries.

Submitted papers must describe the results of original research on a subject related to coatings technology, or present a significantly insightful, comprehensive review of a field of coatings technology. Work done on coatings related topics as part of an undergraduate research project or as a senior thesis is appropriate for submissions.

Those wishing to enter the competition must send a letter of intent, along with the title of the proposed paper and a brief abstract, by March 15, 2000 to: Hendry Awards Committee, c/o FSCT, 492 Norristown Rd., Blue Bell, PA 19422-2350. The deadline for receipt of manuscripts is June 15, 2000.

The A. L. Hendry Award is sponsored by the Southern Society for Coatings Technology and commemorates the industry contributions of the late Alfred L. Hendry, President of A.L. Hendry Co., Tampa, FL. He was a Past-President of the Southern Society and an active participant in many of FSCT's educational activities.

## North Dakota State University (NDSU)

The Department of Polymers and Coatings at NDSU and the National Gallery of Art (NGA), Washington, DC recently received a \$50,000 grant from the National Center for Preservation Technology and Training for research for the period June 1999-June 2000. Funded on a renewable basis over the next three years, this research will address the development of electrochemical test methods for corrosion protective coatings as well as the need for improved protective coating systems for outdoor bronze sculpture. Directed by Prof. Gordon P. Bierwagen, the work is being performed as a joint effort with Rene de la Rie (NGA) and Lynn B. Brostoff (Mellon Institute, Pittsburgh, PA). In this project, coating science and art conservation are being merged in an attempt to find better ways to test and develop a coating system to resist corrosion on outdoor bronze sculpture.

This research specifically addresses the need for new test methods as well as coating systems for outdoor bronze sculpture. Bronze, an alloy of mostly copper and tin, is often used in outdoor sculpture. Outdoor bronze sculptures must "survive" in an environment of pollutants, acid rain and varying temperatures. It is through this research that new coating systems are being studied to protect sculptures from a hostile environment.

Lisa Ellingson, a first-year graduate student in polymers and coatings is performing most of the experimental work at NDSU under Bierwagen's direction, while her counterpart at the NGA is Tara Shedlovsky, who is directed by de la Rie.

For more information, contact Prof. Bierwagen at 701-231-8294.



**CORM 2000**

**Second Announcement and Call for Papers  
Optical Radiation  
Accreditation & Standards**

**CORM Annual Conference and Meeting  
May 8 -10, 2000 Marriott Airport Hotel,  
Rochester, New York USA**

The year 2000 annual meeting and conference of the Council for Optical Radiation Measurements (CORM 2000) will be held at the Marriott Airport Hotel in Rochester, New York. CORM 2000 will focus on "Accreditation and Standards" issues in the fields of Radiometry and Optical Properties of Materials. The first day will feature a day-long session on accreditation and standards in radiometry, including discussions of NVLAP, A2LA, and NACLA. The second day will emphasize measurement and uncertainties in the area of color measurement.

The conference will also include CORM Technical Committee meetings and the annual CORM Banquet and Franc Grum Memorial Lecture. The banquet and lecture will be held at the award-winning Casa Larga Vineyards located in the viticultural region of the Finger Lakes.

For further information or to inquire about presenting a paper please contact either of the conference coordinators listed below:

**Philip Wychorski**  
Eastman Kodak Co.  
1669 Lake Avenue,  
Rochester, NY 14652-464  
716-722-7022 716-722-4793 Fax  
*pfw86344@kodak.com*

**Ann Laidlaw**  
She-Lyn, Inc.  
1108 Grecale Street  
Greensboro, NC 27408  
336-274-1963 336-274-1971 Fax  
*ann@shelyn.com*

**XML & Printing  
A Special TAGA Program  
June 14, 2000**

TAGA is pleased to announced that there will be a special one-day TAGA session titled XML & Printing on Wednesday, June 14, 2000, in conjunction with the Graphic Communication Association's XML Europe 2000 event. The conference will be held in the Palais des Congr s, a world class facility at Porte Maillot, near the Arc de Triomphe in Paris, France. TAGA was last in Paris in 1995 for its first European conference TAGA/IARIGAI '95 Paris. We look forward to returning to the City of Light for this special one-day program to help celebrate the new millennium.

XML Europe '99 was host to over 900 participants in Granada, Spain, and GCA expects continued growth in 2000. The full conference will take place over four days, preceded by a day of tutorials. There will be four tracks with full conference plenaries scattered throughout the week along with a few panel discussions.

The overall conference will provide multiple tracks offering user and technical expert topics, such as Core and Application Technologies as well as Standards Updates presented by ISO, W3C, and OASIS representatives. There will also be sessions on management topics, e-business, graphics, and Internet/Internet related issues.

In addition to the one-day TAGA XML & Printing program, OASIS will hold their 2-day European Workshop in Paris the week before the conference. As always, the GCA will host the ISO SGML committee meetings for ISO/TEC JTC1 SC34 in conjunction with the conference. The International SGML Users' Group will have its Annual General Meeting during the Conference, and we anticipate that many product vendors will take this opportunity to host their User Group meetings. For information, please contact: TAGA Office, 68 Lomb Memorial Dr., Rochester, NY 14623-5604. Fax: 716-475-2250 or *TAGAOfc@aol.com*.

## **Seein' Red**

### **Colored Mulch Starves Nematodes**

Red plastic mulch is making life miserable for root knot nematodes in South Carolina tomato fields.

In springtime field tests at Florence, SC tomato plants grown with red plastic mulch were able to ward off the nematodes and produce more tomatoes than plants grown with plastic mulch, say US Department of Agriculture plant physiologist Michael J. Kasperbauer and Clemson University nematologist Bruce Fortnum.

For a decade, Kasperbauer and Patrick G. Hunt of USDA Agriculture Research Service have been experimenting with colored mulches as a way to boost plant yields, while conserving water and controlling weeds. They found that red mulch boosts yields by increasing a tomato plant's ability to keep more of its growth above ground, especially in the fruit. But the latest study is the first documenting that red mulch also suppresses damage by nematodes that live in the roots.

"This is especially timely because of the impending ban on methyl bromide, which is used to treat the soil to kill nematodes," says Hunt. He and Kasperbauer are based at the agency's Coastal Plains Soil, Water, and Plant Research Laboratory in Florence, SC.

The scientists are not certain how red mulch helps tomato plants fight off nematodes. Kasperbauer says it could be due to a tug-of-war between the mulch and the nematodes. "The red mulch reflects wavelengths of light that cause the plant to keep more above ground, which results in greater yield," he says. "Meanwhile, the plant is putting less energy into its root system, the very food the nematodes feed on. So reflection from the red mulch, in effect, tugs food away from the nematodes that are trying to draw nutrients from the roots," says Kasperbauer.

To test the effects of colored mulches in small-scale field plots, the research team sterilized the soil to eliminate all nematodes. Then they planted the to-

matoes, mulched them with black or red plastic, and inoculated the roots with different numbers of nematodes, ranging from 0 to 200,000 nematode eggs per plant. The results were dramatic, especially in spring. Plants inoculated with 200,000 nematode eggs and grown with black plastic mulch produced only 8 pounds of tomatoes, compared to 17 pounds for the plants grown over red mulch.

Farmers and home gardeners who want to take advantage of the red mulch can buy it commercially. ARS (Agricultural Research Service) has filed a patent on the mulch and is working cooperatively with Sonoco Products, Inc., of Hartsville, SC, to develop improved plastic mulches. Ken-Bar, Inc., of Reading, MA, sells the mulch directly and through several supply stores and catalogs.

*Sean Adams, ARS.*

*Mr. Kasperbauer is at the ARS Coastal Plains Soil, Water, and Plant Research Lab., 2611 West Lucas St., Florence, SC 29501-1242 803-669-5203 803-669-6970 Fax*

(This article first appeared in the Agricultural Research of Agricultural Research Service, US Department of Agriculture, October 1997.)

## **Detroit Colour Council**

The DCC held their late fall meeting November 11<sup>th</sup> at the Doubletree Hotel, Troy, MI. The subject was "Instrumental Measurement of Metallic and Pearlescent Colors." The two speakers were Paul Hoffman, EM Industries and Jack Ladson, Estée Lauder Companies. Their presentations were both interesting and informative. Paul reviewed basic differences between absorption and reflection for colored, metallic and pearlescent pigments. He noted that with the Millennium approaching, silver is gaining more status in the automotive industry. He also talked about the difference effects between large and small particle size pearlescent pigments.

Jack presented slides regarding "Assessing Color Measurement." Topics discussed, including examples, were: Materials (i.e. Standard Test Method; Colorimetric Performance Verification Standards), Instrumentation (The different angles available today), and Standards (Standard test method for multi-angle color measurement of metal flakes).

*Jim Keiser*

## Upcoming ISCC Meetings

### Register Now!

#### ISCC 2ND PANCHROMATIC CONFERENCE

February 19-21, 2000

*Color In Its Surround*

Savannah, GA.

Info: Dr. Cynthia Brewer, 814-865-5072;  
fax: 814-865-7943 [cbrewer@essc.psu.edu](mailto:cbrewer@essc.psu.edu)

#### ISCC ANNUAL MEETING & CPMA COLOR PIGMENTS CONFERENCE,

April 16-18, 2000

Charlotte, N.C.

Info: Romesh Kumar 410-823-2161  
[romesh.kumar@clariant.com](mailto:romesh.kumar@clariant.com)

Or Contact the ISCC Office

703-318-0263

703-318-0514 Fax

[iscc@compuserve.com](mailto:iscc@compuserve.com)

## A Limited Supply .....

### Reprints of "Color and Light"

by Fred W. Billmeyer Jr. & Harry K. Hammond, III.

Chapter 40 of ASTM Paint Manual, 23 pages

\$5 each 20 copies \$50... Authorized reprint from  
ASTM Manual 17, Copyright 1996.

American Society for Testing and Materials,

100 Bar Harbor Dr.,

W. Conshahocken, PA19428-2959

### "Demystifying Color" by Bob Chung

11 pages (color), \$5 each 20 copies \$50...

This technical report produced by Bob Chung of  
R.I.T. when he was ISCC Education Committee  
Chair, discusses and explains ten myths about color.

Either publication can be obtained by sending a  
check or money order (pre-paid-s&h included) to:

Inter-Society Color Council,  
Cynthia J. Sturke, Admin. Asst.  
11491 Sunset Hills Road,  
Reston, VA 20190

## ADVERTISING POLICY

The ISCC advertising policy for the Inter-Society Color Council News is as follows. Pre-paid color-related advertising will be accepted thirty days in advance of the publishing date. The rates are

|         |                       |
|---------|-----------------------|
| \$ 100  | business card-size ad |
| \$ 250  | 1/4 page ad           |
| \$ 500  | 1/2 page ad           |
| \$1,000 | full page ad          |

Artwork must be publisher ready and will be returned within 30 days after publication. The publishers reserve the right to determine the acceptability of the advertising. There is a 20% discount offered for a yearly contract. For further information contact: Tek Celikiz, ISCC News Editor or Cynthia Sturke, ISCC Office.

## Jobs Wanted!

This Section is intended to help ISCC members that are in need of, and are looking for employment. Here is an opportunity to use the resources at hand. There is no charge for this service, however, the restrictions are as follows:

1. This service is for ISCC members' use only.
2. No more than 50 words may be used to describe yourself. (Not including name, address and/or telephone number, fax, email)
3. If you are using a P.O. Box, you must supply a complete address.
4. No Agency representing member(s) is allowed.
5. Neither the ISCC News nor the editor are responsible for any errors.
6. You must advise us in writing when you have obtained employment.

We hope this new section will be of value to you, the ISCC member. If you have any suggestions/criticisms, please send them to the editor. Let's make this work!

## PRECISION PRODUCTION OPTICS

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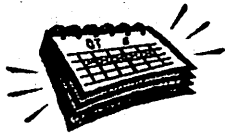
280 Laurel Avenue Highland Park, IL 60035

Tel: 847/432-8204, Fax: 847/432-8243

E-Mail: [lambrecht@laurelindustries.com](mailto:lambrecht@laurelindustries.com)

Web: [www.laurelindustries.com](http://www.laurelindustries.com)





## CALENDAR



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

Cynthia Sturke, ISCC Office  
11491 Sunset Hills Rd. , Reston, VA 20190  
tel: 703-318-0263 email: [iscc@compuserve.com](mailto:iscc@compuserve.com)  
fax: 703-318-0514 website: <http://www.iscc.org>



**ASTM COMMITTEE D-1, Jan 23-26 Paint and Related Coatings, Materials & Applications, Hyatt Regency, New Orleans, LA** Info: T. Brooke, 610-832-9729, fax: 610-83-9666, [tbrooke@astm.org](mailto:tbrooke@astm.org)

**ASTM COMMITTEE E-12, Jan 25-28, Color and Appearance, Hyatt Regency, New Orleans, LA, Info: Bode Buckley:** 610-832-9740; fax: 610-832-1547; [bbuckley@astm.org](mailto:bbuckley@astm.org)

**IS&T 11th INTERNATIONAL SYMPOSIUM ON PHOTOFINISHING TECHNOLOGY, Jan 30-Feb 1, Bally's Las Vegas Hotel, Las Vegas, NV, Info: IS&T, 7003 Kilworth lane, Springfield, VA 22151, 703-642-9090, fax: 703-642-9094; [info@imaging.org](mailto:info@imaging.org).**

**OSA VISION SCIENCE AND ITS APPLICATIONS, February 11-14, Santa Fe, NM; Info: 202-416-1907, [cust.serv@osa.org](mailto:cust.serv@osa.org); Website: [http://www.osa.org/mtg\\_conf/2000/vsia](http://www.osa.org/mtg_conf/2000/vsia)**

**ANDINA PAINT 2000, Feb 16-17, Valencia, Venezuela, Rod Moon, 610-940-0777, [rodm@coatingstech.org](mailto:rodm@coatingstech.org)**

**ISCC 2ND PANCHROMATIC CONFERENCE, Feb 19-21, Color In Its Surround; Savannah, GA Info: Dr. Cynthia Brewer** 814-865-5072; fax: 814-865-7943, [cbrewer@essc.psu.edu](mailto:cbrewer@essc.psu.edu)

**OPTICAL FIBER COMMUNICATION (OFC) CONFERENCE, March 5-10, Baltimore, MD; Info: Meeting, 202-416-1907, [cust.serv@osa.org](mailto:cust.serv@osa.org); Exhibits, 202-416-1950, [exhibits@osa.org](mailto:exhibits@osa.org); Website: <http://www.osa.org/ofc>**

**AATCC COLOR SCIENCE SYMPOSIUM, March 23-24, Hyatt Regency, Greenville, SC. For info: Patty Simon, AATCC, P.O. Box 12215, Research Triangle Park, N.C. 27709-2215; 919-549-3546; fax 919-549-8933; [simonp@aatcc.org](mailto:simonp@aatcc.org)**

**IS&T CONFERENCE ON IMAGE PROCESSING, March 26-27, Portland Marriott Hotel, Portland, OR. [pics@imaging.org](mailto:pics@imaging.org) website: <http://www.imaging.org/conferences/pics2000/authors.html>**

**NIST WORKSHOP ON METROLOGY AND MODELING OF COLOR AND APPEARANCE, March 29-30, NIST, Gaithersburg, MD; Info: Mary McKnight, 301-975-6714 or [mary.mcknight@nist.gov](mailto:mary.mcknight@nist.gov) or Maria Nadal 301-975-4632 or [maria.nadal@nist.gov](mailto:maria.nadal@nist.gov)**

**TAGA ANNUAL TECHNICAL CONFERENCE, April 2 - 5, Marriott Hotel, Colorado Springs, CO. Info: 716-475-7470, fax: 716 475-2250, [TAGAOfc@aol.com](mailto:TAGAOfc@aol.com); website: <http://www.taga.org>**

**NPL COLOUR AND VISUAL SCALES 2000, April 3-5, National Physical Lab., CIE DIVISIONS 1 AND 2, April 6-8, Royal Holloway College, Univ. of London, Egham, Gr. Br. Info: CIE Central Bureau or Linda Marshall, Colour 2000 Admin., The Old Manse, Nottingham Rd, Keyworth, Nottingham, NG12 5FB, UK +44 115 9376070 fax: +44 115 9375271**

**CORM ANNUAL CONFERENCE & MEETING, May 8-10, Marriott Airport Hotel, Rochester, NY Info: Philip Wychorski, Eastman Kodak; 761-722-7022; 716-722-4793 fax or Ann Laidlaw, She-Lyn, Inc., 336-274-1963; 336-274-1971 fax;**

**ARGENCOLOR 2000 - THE 5TH ARGENTINE COLOR CONGRESS, May 15-18, Mendoza, Argentina**

Contact: Prof. Haydee Palomo, [extarte@raiz.uncu.edu.ar](mailto:extarte@raiz.uncu.edu.ar) or Prof. Jose Luis Caivano, [jcaivano@fadu.uba.ar](mailto:jcaivano@fadu.uba.ar)

**ASPRS ANNUAL CONF., May 22-26**, Omni Shoreham Hotel, Washington, DC. 301-493-0290; fax: 301-493-0208  
[www.asprs.org](http://www.asprs.org).

**TAGA/VDD 4TH INTERNATIONAL PRINTING & RESEARCH CONGRESS, May 26**, with Drupa 2000, Congress Centrum Dusseldorf, Room 3, Dusseldorf Fairgrounds, Dusseldorf, Germany

**ASTM COMMITTEE D-1, June 11-14**, Paint and Related Coatings, Materials and Applications, Ascagua's Nugget, Reno, NV Info: T. Brooke, 610-832-9729; fax: 610-832-9666; email: [tbrooke@astm.org](mailto:tbrooke@astm.org)

**ASTM COMMITTEE E-12, June 20-23**, Color and Appearance, Sheraton Hotel, Toronto. Info: Bode Buckley: 610-832-9740 fax: 610-832-1547; [bbuckley@astm.org](mailto:bbuckley@astm.org)

**AATCC INTL CONFERENCE AND EXHIBITION, Sept. 12-20**, Benton Conv. Ctr, Winston-Salem, SC, Hilda McQueen Tel: 919-549-3549; Fax: 919-549-8141, [mcqueenh@aatcc.org](mailto:mcqueenh@aatcc.org). Website: [www.aatcc.org](http://www.aatcc.org)

**CGIP 2000, Oct. 1-4**, Intl Conf. on Color in Graphics and Image Processing. St.Etienne, France. Info: Alain Tremeau [tremeau@vision.univ-st-etienne.fr](mailto:tremeau@vision.univ-st-etienne.fr) website: [www.univ-st-etienne.fr/~iupvis](http://www.univ-st-etienne.fr/~iupvis)

**FSCT ANNUAL MEETING TECHNICAL PROGRAM, October 18-20**, Lakeside Center, McCormick Place, Chicago IL, Info: FSCT, 492 Norristown Rd., Blue Bell, PA 19422; 610-940-0777; fax: 610-940-0292; [rodm@coatingstech.org](mailto:rodm@coatingstech.org).

**OSA ANNUAL MEETING, October 22-27**, Providence, RI; Info: Meeting, 202-416-1907, [cust.serv@osa.org](mailto:cust.serv@osa.org); Exhibits, 202-416-1950, [exhibits@osa.org](mailto:exhibits@osa.org)

**2000 AIC MEETING SEOUL, NOV. 6-7**, Color and Environment. Seoul, Korea, 82-2-365-514 fax: 82-2-365-0014

**IS&T/SID 8TH COLOR IMAGING CONFERENCE Nov. 6-10**, Color Science, Systems & Applications, SunBurst Resort Hotel, Scottsdale, AZ. 703-642-9090 Fax: 703-642-9094 [info@imaging.org](mailto:info@imaging.org); website: [www.imaging.org](http://www.imaging.org)

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**ASTM COMMITTEE D-1, Jan. 23-26**, Paint and Related Coatings, Materials and Applications, Info: T. Brooke, 610-832-9729; fax: 610-83-9666; [tbrooke@astm.org](mailto:tbrooke@astm.org)

**ASTM COMMITTEE E-12, Jan 23-26**, Color and Appearance, Embassy Suites, Ft. Lauderdale, FL. Info: Bode Buckley, 610-832-9740; fax: 610-832-1547; [bbuckley@astm.org](mailto:bbuckley@astm.org)

**TAGA ANNUAL TECHNICAL CONFERENCE, April 22 - 25**, Atlanta, GA. Info: 716- 475-7470; fax: 716- 475-2250 [TAGAOfc@aol.com](mailto:TAGAOfc@aol.com); website: <http://www.taga.org>

**ASPRS ANNUAL CONFERENCE, April 23-27**, St. Louis, MO, 301-493-0290; Fax: 301-493-0208 [www.asprs.org](http://www.asprs.org).

**ISCC/AIC MTG, June 24-29**, Rochester, NY; Paula J.Alessi, 716-477-7673; Fax: 716-722-1116 [pjalessi@kodak.com](mailto:pjalessi@kodak.com)

**COLOR MARKETING GROUP CONFERENCE, Oct 29-31**, 2000 Boston, MA; Tel: 703-329-8500

**IS&T/SID 8TH COLOR IMAGING CONF., Nov. 5-9**, Color Science, Systems & Applications, Scottsdale, AZ.



Number 383 January/February 2000

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