

# Inter-Society Color Council *News*

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## CALL FOR NOMINATIONS FOR ISCC DIRECTORS

The ISCC Nominating Committee would like to announce a call for nominations for Directors to serve on the ISCC Board of Directors for the 1995-1998 term of office. Anyone from the ISCC general membership is eligible.

The duties of the Board of Directors shall be those pertaining to the executive, financial, or general administrative business of the council. The Board shall conduct the business of the Council during the interim between the annual meetings, shall develop earnestly and carefully the aims and purposes of the Council, shall supervise the expenditures of all monies, and shall fix the time and place of the annual meeting of the Council.

Each Director is expected to attend three meetings of the Board of Directors held each year.

Nominations, consisting of the candidate's name and a short biographical paragraph, are being accepted until September 15th by the Chair of the Nominating Committee:

Paula J. Alessi  
Eastman Kodak Company  
1700 Dewey Avenue  
Rochester, NY 14650-1907  
716-477-7673  
716-722-1116 (Fax)  
pjalessi@kodak.com (e-mail)

**REGISTER NOW FOR THE  
ISCC 1995 WILLIAMSBURG  
PAN-CHROMATIC  
CONFERENCE  
FEBRUARY 12-15, 1995  
REGISTRATION INFORMATION IS  
INCLUDED AS AN INSERT WITH THIS  
ISSUE OF ISCC NEWS**

## SINCERE APOLOGIES!

Sincere apologies are extended to Dr. Peter Kaiser as well as to the ISCC general membership for the error in the picture captions highlighting the 1994 Annual Meeting of ISCC News Number 350. Dr. Peter Kaiser did not receive the Godlove Award as the picture captions incorrectly state. Dr. Peter Kaiser received the Macbeth Award. To set the record straight, we decided to reprint the pictures here in ISCC News Number 351 with the correct captions and the text of the Macbeth Award citation. Peter, we hope you accept our apologies!



*Dr. Robert Boynton rises to give the citation for the 1994 ISCC Macbeth Award.*



*President Alessi proudly presents Dr. Peter Kaiser the 1994 ISCC Macbeth Award.*

### CITATION FOR PETER K. KAISER ON THE OCCASION OF HIS RECEIPT OF THE MACBETH AWARD OF THE INTER-SOCIETY COLOR COUNCIL, APRIL 25, 1994, IN TROY MICHIGAN

Peter Kaiser is receiving the 1994 Macbeth Award in recognition of his contributions to the minimally distinct border (MDB) as a photometric technique. The beginning of this work was at the University of Rochester nearly 30 years ago, to which Pete had come as a post-doctoral fellow following his graduate work at UCLA, where he had been concerned with spatial perception. At Rochester, he quickly became hooked on color. Since then, Peter has promoted the use of the MDB as a photometric method and, within the last decade (with European collaborators) he has published important work concerned with its physiological basis.

After Rochester, Pete took an academic position at York University in Toronto, with little expectation that he would remain there for more than 25

years and eventually add Canadian citizenship to his American credentials. He worked his way up the academic ranks to full professor, chaired his department for a while, and recently achieved emeritus status — but this is a bit of a fake because Pete remains active in the position of Senior Scholar, relieved of teaching duties if he chooses, so that he can now devote more time to research and scholarship. We can all be grateful that he has not *really* retired, and will continue to make important contributions.

Peter Kaiser has been very active in my contexts outside his institution. One of these has been the ISCC, as a member of the Board of Directors. He is a member of the Canadian Advisory Committee of the International Standards Organization, concerned particularly with color notation. He has

been very active in the CIE, including authorship of one of its technical reports. He has been chair of a CIE technical committee concerned with heterochromatic brightness matching, and was Vice President of the Canadian National Committee of the CIE. He was the first topical editor for color vision for *Color Research and Application*, on whose editorial board he currently serves. He was also President of the Canadian Society for Color in Art, Industry, and Science, which is the ISCC's sister organization in Canada.

The domain of color has attracted its share of quacks and charlatans. For example these include claims that color can be experienced by the sense of touch, and that Baker-Miller pink soothes jailbirds. In this connection I would like to make special mention of his trio of "public service" papers,

published in CR&A. These are concerned with non-visual color perception, physiological responses to color, and the use of light therapy. In these, Pete has separated the wheat from the chaff in a balanced manner, a task which required his delving into, and carefully evaluating, a literature well outside his primary research domain.

Pete's research has been chanced by the additional experience acquired during sabbatical leaves from York University. He spent valuable time at NRC in Ottawa during the '70s, with Gunter Wyszecki. His physiological work began with a fellowship at the Mas Planck Institute for Biophysical Chemistry in Germany. We were pleased to have him for one year at UCSD in 1982 - 1983.

On a personal note: Our first paper jointly authored was published in 1968, and out most recent, in 1985. We will publish together one more time, because I have agreed to take out from my baseball research to gag along as second author of the second edition of *Human Color Vision*, first published in 1979. Throughout the year, Pete has been an astute collaborator and also a delightful one — I cannot remember a cross word between us. I have also enjoyed being acquainted with this family — his wife Linda and their two grown children. (David was in a crib when I first met him, and Wendy had not yet arrived).

Finally, I cannot conclude this citation without mentioning the unique contribution that Pete has made to the visual science community through the development of the so-called *CV-Net*, which he started in the very early days of electronic mail. Unlike some computer bulletin boards for which the signal-to-noise ratio can be very low, this one has been dedicated and Pete Kaiser does the editing—sparing the rest of us much electronic trash. He developed and has maintained a mailing list accessible to all of us of more than 1,500 names. By e-mail, Pete and I are in contact almost on a daily basis as the revision of *Human Color Vision* moves forward.

Clearly, Peter K. Kaiser is highly deserving of the Macbeth Award. I am proud, Pete, to have had you as one of my postdoctoral students, and I salute you for your many solid contributions to the science of color, both basic and applied.

*Prepared by Robert M. Boynton*



## CITATION FOR MISS THERESE COMMERFORD ON THE OCCASION OF HER RECEIPT OF THE ISCC NICKERSON SERVICE AWARD ON APRIL 25, 1994 IN TROY, MICHIGAN

I cannot think of anything which gives me more pleasure than to stand before you today, representing this prestigious organization in honoring Therese R. Commerford, recipient of The 1994 ISCC Nickerson Service Award.

There are three major awards which the Inter-Society Color Council bestows on those who have made outstanding contributions to color science and its many disciplines. The Nickerson Service Award is unique for it is awarded specifically for outstanding long-term service and dedication to the aims and purposes of the Inter-Society Color Council. Therese R. Commerford meets this criterion.

The award was named to honor a remarkable and wonderful lady, the late Dorothy M. Nickerson. A founding member of the Council, Dorothy served as Secretary from 1938-1950, and as its President from 1954 to 1956. She remained an active and devoted member, attending and participating in our meetings, well into her 80 plus years. She blazed a trail for us to follow.

It would be thirty-two years later before another woman would ascent to the office of Secretary of the ISCC. In 1982, Therese was nominated and agreed to accept the office of Secretary when the then current Secretary Dr. Fred W. Billmeyer Jr. retired from Rensselaer Polytechnic Institute.

Although the office was redefined, I thought to myself at the time, "what courage stepping into one of Fred's offices, he is so efficient, well organized and has several competent students to help, how is she going to manage alone?" In her quiet unassuming way and without a computer, Therese took over the office and performed her duties and responsibilities, reminding us of commitment dates we had made at previous Board of Directors meetings. She was a true team worker and very supportive of me when I became ISCC President.

Therese was, and still is, an active member of the American Association of Textile Chemists and Colorists. She has served as Vice-President representing the Northern New England Section from 1975-1977, Chairman of the Research Committee RA 36, Color Measurement 1977-1980. She was involved with the Technical Committee on Research and the Executive Committee on Research plus many other projects.

I first met Therese in 1971 when she attended the annual meeting with Dr. Roland Derby, (one of our Past Presidents) owner of the Derby Company Inc. where she was Color Science Lab supervisor. I was a new member, not too sure about the different group activities. It was reassuring to have someone explain the

procedures and functions of various committees and to see a familiar face when attending them. There was a member of Project Committee #16 Standard Methods for Mounting Textile Samples for Colorimetric Measurement, #24 Catalog of Color Measuring Instruments, #25 Determination of the Strength of Colorants-Dyes, #27 Indices of Metamerism and #34 Color Difference Problems.

I began to really know Therese (Terry) Commerford when we participated in the Council's first Long Range Planning Committee and the more relaxed atmosphere of the Williamsburg conferences where she was Session Chairman at the ISCC-IES meeting in 1983. In fact we were always busy but we had time to relax and occasionally listen to the late Gunter Wysocki and Franc Grum relate some of their humorous experiences, which would leave us in fits of laughter.

In 1985, we attended the AIC Conference in Monte Carlo before taking off across Europe. I think that is when Terry really got to know me. I told her this would be no fancy American excursion. We would be traveling European style, mixing with the locals, and staying at pensions. We had some colorful experiences beginning with my rented car driving up a one way street the wrong way. Those French cars hide their reverse so foreigners get in a panic looking for it. There was an interesting experience in Milan, and it wasn't too easy finding our hotel in the middle of a forest late at night in the former Yugoslavia, but all ended well. I rather think Therese was glad to get back to the safety of the U.S. Army Natick R. D. Center, although she's never really mentioned it.

These few minutes hardly give me time to tell you how deserving Therese R. Commerford is of the award you have chosen to give her. I know she is very proud to receive The Nickerson Service Award.

*Prepared by Joyce S. Davenport*

## MEETING SUMMARY FROM ISCC/DCC JOINT SYMPOSIUM HELD AT THE ISCC 63RD ANNUAL MEETING

The DCC's 16th Annual Symposium was held in conjunction with the ISCC's 63rd Annual Meeting. Over 300 people attended this highly successful conference. The Detroit Colour Council's segment on Tuesday April 26, was divided into two parts: Design and Technical. Noted speakers gave interesting talks that provided the audience with a better understanding and insight into the important role color plays in the automotive industry. Professor Reznikoff, of Arizona State University, covered the impact of social economic patterns and special events on popular color usage in the automotive, clothing, and interiors industries. Bob Daily, Dupont Automotive, discussed color trends, and how color goes from concept to customer. Trevor Creed, Chrysler Corporation, gave an entertaining, yet serious look at the complex and sometimes frustrating world of Color, Trim and Mastering. Tom Matano, Mazda R&D of North America, gave one car manufacturer's approach to dealing with bi-cultural issues, both from historical and present-day perspectives. The luncheon speaker, Nellie Toledo, of the Ford Motor Co., showed a highly entertaining video and talked about the need for more women in the Design stage of automobiles. She aptly pointed out that there are differences between men and women and the fact that women have a lot of influence in the purchase of a new car.

The afternoon session covered technical topics, starting with Harold Fitzpatrick, of Fitzpatrick & Israels, Esqs., who presented a review of issues faced by major classes of pigments.

Allan Rodrigues, Dupont Automotive, reviewed the status of ASTM

E-12.03.02: Measurement of Metallic and Pearlescent Colors. Allan also pointed out the need for multiple measurements with averaging in order to obtain realistic readings. Professor Roy Berns, Rochester Institute of Technology, discussed the differences and similarities of CIE TC1-29 vs. CMC color difference formula. Dr. Berns was joined by industry users, James Fencil (Gibraltar Chemical Works) and Johnny Suthers (Eastman Chemical Co.) for a lively discussion on the industrial application of the two formulas.

*James R. Keiser*

## ISCC WILLIAMSBURG CONFERENCE 1995 PAN-CHROMATIC CONFERENCE CALL FOR PAPERS

The Inter-Society Color Council (ISCC) is sponsoring the First Pan-Chromatic Conference, to be held in Williamsburg, Virginia, from February 12-15, 1995. The conference will provide a forum for people in all areas of color science to come together and exchange news and ideas about color measurement and use.

Presentations will cover all areas of color science, with four areas specially featured. For each of the featured areas, a tutorial overview talk will introduce the issues of that area to researchers and practitioners in other branches of color science. The session will also include selected technical presentations in the area.

Featured areas this year will be:

- Colorimetry - Organizer Mike Brill  
Tutorial talk "Color and Light: More Than Meets the Eye" by Danny Rich
- Color Vision - Organizer Joel Pokorny  
Tutorial talk "Mechanisms of Color Vision" by Peter Lennie
- Color Machine Vision - Organizer

Steve Shafer

Tutorial talk "Color in Machine Perception" by Steve Shafer

• Color Computer Graphics - Organizer Gary Meyer

Tutorial talk "Color Synthesis in Computer Graphics" by Gary Meyer

An "interdisciplinary session" will include presentations in areas not featured this year. A panel session will allow focused discussion of the issues in this session. The James Bartleson Award will be presented to a young color scientist selected by the Colour Group of Great Britain.

Williamsburg, the traditional site for the February ISCC conferences, is the location of Colonial Williamsburg, a reconstructed town from the Colonial era. The conference will be held in the Williamsburg Lodge, with a special

conference rate for rooms. An on-site banquet dinner on Tuesday, February 14, will celebrate the Bartleson Award.

Submissions are invited in all areas of color science, especially, but not limited to, the four featured areas. Each submission should include a title, the authors' names, and an abstract of not more than 200 words. Contact information should include daytime telephone numbers, FAX number, and, if available, an Internet e-mail address. Submissions are due by September 1, 1994, and authors will be notified of acceptance by November 1, 1994. The selected speakers may submit a one-page extended abstract by December 1, 1994. These will be collected into a booklet and distributed at the conference. A special issue of Color Research & Application will be

reserved for papers submitted by the speakers at the Pan-Chromatic Conference. Both the conference submissions and journal papers will be subject to scientific review before acceptance.

The conference organizers are Mike Brill and Steve Shafer. The local arrangements chair is Romesh Kumar. Please send submissions by hard-copy, FAX, or Internet e-mail to:

Steve Shafer  
Computer Science Department  
Carnegie-Mellon University  
Pittsburgh, PA 15213  
(412) 268-2527  
Fax: (412) 268-6704  
Internet e-mail: sas@cs.cmu.edu

Registration information and final program will be available in November 1994.

## NEWS FROM MEMBER BODIES

### AATCC ACTIVITY



Summary of Research Committee RA36 on Color Measurement: The use of precision and bias statements for the

use of Gray Scales was deferred to Committee RA102 on Statistics Advisory. Committee letter ballots for Evaluation Procedure 3, 5-Step AATCC Chromatic Transference Scale; and Evaluation Procedure 4, Standard Depth Scales for Depth Determination were approved. The results of the committee letter ballot for the proposed new AATCC Evaluation Procedure 5, Instrumental Color Measurement were reviewed with excellent committee input. Revision of this proposed procedure is underway. The recent TCR letter ballot to withdraw Method 148, Light Blocking Effect of Curtain Materials, was approved. It will be deleted from the 1995 AATCC TECHNICAL MANUAL.

The recent TCR letter ballot for reaffirmation of Method 110, Whiteness of Textiles, was approved as balloted and will be reaffirmed in the 1995

MANUAL. The method is under review for revision this year. Abstracts for the new edition of *Color Technology in the Textile Industry*, are due by July 1994. The completed papers must be submitted by November 1994. The form for the submitted papers will be ready by June 1994. The script for the current Gray Scale video has been transcribed. The transcript will require extensive editing before a new video is made. Commitments of AATCC to ISO are current except for the proposed new evaluation procedure, which will require another RA36 committee ballot. A proposed revision of Method 145, Color Measurement of the Blue Wool Lightfastness Standards: Instrumental, is underway. A proposed committee document entitled "Method for Instrumental Assessment of the Change in Color of a Test Specimen," is ready for committee letter ballot. Plans for 1995 Joint Meeting of ISCC/AATCC in Greensboro were discussed. A plant tour has been recommended and will be pursued.

*From Textile Chemist and Colorist, Vol. 26, No. 8, August 1994*

### CAUS TIDBITS

#### Car Color Green on the Move



White may soon be green with envy, as the latter threatens to replace the former as the most popular color on vehicles sold in North America. White slipped to 20 percent of all autos sold last year, from 24 percent in 1992, while green doubled in popularity to 15 percent, according to DuPont Automotive annual color preference survey. Medium red dipped to third.

Green, in fact, took the lead among sports cars, capturing 16 percent of all sales, compared to 15 percent for red, DuPont said.

*(As reported in the April 1994 issue of Motorist News.) From Color Association of the United States (CAUS) News*

#### MORE CAUS TIDBITS

After three seasons of neutrals, bright hues return.

The CAUS Men's Committee forecasts that the Spring and Summer 1996 season will focus on bright colors

and saturated darks. Browned and rust colors feature on the projection, emphasizing the strong influence and input of women's wear colors and young men's wear. A playful approach and the influence of travel is suggested by the following five color groupings; "Passport," "Airport," "Import," "Newport," and "Transport."

Several levels of brights set the colorful tone for CAUS Women's Spring/Summer 1996 Forecast, which in its entirety is labelled Atmosphere USA. Bright colors include oranges, pinks, blues and acidic greens. These are projected in three groups called "Artifice I Miami," "Artifice II L.A.," and "Artifice III Baja." Browned Southwest canyon hues, New England classic darks and a row of veiled Bayou pale tones complete the card.

For Spring and Summer 1996, the Children's Committee emphasizes softly pale, yellowed tones and warmed reddish shades (roughly three-quarters of the colors projected). A predominance of colors on the forecast are geared toward girls' markets.

*from 1994 Color Association of the United States (CAUS) July News*

## INTERVIEW WITH DEBORAH KASMIER, CHILD HEALTH CARE DESIGNER

Q. Where is the newness in color designs for children's spaces today?

A. With parents working longer hours, there is a wish on their part for quality time and for quality space for their children. When I was growing up, most little girls had the same furniture in their bedroom. Today, more time and money is lavished on a child's environment whether it be a school, a hospital or a room. There is simply a lot more thought that goes into the design of spaces for children. For example, at my children's school, there is a vestibule, a welcoming area, and then columns of color blasts punctuating a neutrally colored space.

Q. I understand you conducted research with fourth graders. What colors do they like?

A. They like colors that are very

saturated, such as hot pink or poison green. These saturated shades are precisely the hues their parents run from. Gray and black are the two most favored neutrals among young children.

Q. How do you handle such polarities of color taste between children and parents? Also, how do you reconcile differences of taste among children and hospital staff and administrators. Whose input do you follow in your designs?

A. Typically in the hospital, we use information from the following groups: administrative staff, community members, parents and children. We avoid certain hues such as yellow, pink or blue because these colors can cast an unhealthy skin tone. We would use a really saturated color accent such as Leonard Blue, Peppermint or Bluefish Blue and choose the Pewter for a ground shade (References are to CAUS Children's Forecast for Fall/Winter 1995/1996).

Saturated color would tend to be on the floor since the walls in light value would maximize lighting and avoid adverse color casting effects. Public spaces would be colored more like hospitality designs, using blues, pinks and greens. Clinical areas tend to be colored in neutral shades or white. There is a clear demarcation between public and clinical space.

Q. In fashion, androgynous looks and colors are popular. Is this principle applied to designs for youngsters in hospitals?

A. Yes, we would not use pink, but we would use purple. I use a black only in small quantities because parents have difficulty associating black to a hospital setting.

Q. How can you know in advance whether someone will have "difficulty" with a color.

A. Generally, people who are comfortable with themselves are also comfortable with using color.

(Editor's note" Mrs. Kasmier, whom many attendees at Color 2000 will recall from her fine presentation on health care design, continues to do research work with design and textile firms that are addressing the issue of

appropriate color design in pediatric care. She works with her associate, Eric Johnson, with the Association for the Care of Children's Health through their Design Resource Network, to define the direction for pediatric textile design.)

*from 1994 Color Association of the United States (CAUS) July News*

## "FUTUREVIEW" IS FOCUS OF ANNUAL MEETING

KEYNOTE ADDRESS BY LEADING TECHNOLOGY FORECASTER, DANIEL BURRUS

**FSCT** One of the nation's leading science and technology forecasters, Daniel Burrus, will present the Keynote Address at the Opening Session of the FSCT's 70th Annual Meeting, being held in New Orleans, LA, on October 12-14.

Mr. Burrus is the founder and president of Burrus Research Associates, Inc., a research and consulting firm that specializes in global innovations in science and technology, their creative application, and future impact.

His firm uses specially developed information-gathering techniques which enable it to help corporations, associations, and universities creatively apply cutting-edge information as they develop both short- and long-range plans.

His company's mission is to assist people of all ages to understand and profit from technological change, and to become excited and involved in building a better tomorrow by discovering creative uses for the new tools of science. Their client list includes a wide range of industries, including many Fortune 500 companies, such as IBM, AT&T, Exxon, DuPont, Chrysler, Philip Morris, and Motorola.

Mr. Burrus produces a variety of publications including the *Technology Futures Newsletter* and is the author of several audio and video cassette learning programs.

His interest in research became apparent in his third year of college when he became one of the first undergraduates in the nation to direct a federal research grant. He went on to found and manage five businesses in a variety of fields, one of which, in the field of aviation, was a national leader with over 30 locations.

Mr. Burrus has produced his own cable television show entitled "Futurescope," and has delivered over 800 speeches in the past six years to top executives, sales people, and educators.

In his timely and provocative presentations, Mr. Burrus helps his audiences understand how to make a rapidly changing business environment a competitive advantage by getting all members of an organization involved in creatively utilizing the latest technology.

The Opening Session will be held on Wednesday, October 12, at the Ernest N. Morial Convention Center.

## "EXCELLENCE THROUGH INNOVATION"

### 1994 TECHNICAL PROGRAM THEME

In keeping with the theme, "Excellence Through Innovation," the FSCT Annual Meeting Program Committee has developed a dynamic program which focuses on innovations in technology and presents state-of-the-art information.

The Annual Meeting will open with the popular Technical Focus presentation. This year, the speaker is Mark Holt of CIBA GEIGY in Ardsley, NY. He will discuss innovative work which exemplifies the Annual Meeting Program theme.

New to the FSCT event are "Early Bird" sessions which will be held on Thursday, October 13, to give more detailed information on pertinent subjects. Initial topics will cover "Empowerment" and "Quality."

In addition, a wide variety of technical presentations will be offered focusing on areas of interest, such as advanced topics in coatings research, color technology, innovations in the development of VOC compliant corrosion inhibitive coating, and an ISO 9000 case study. Highlights include a presentation on the human side of process safety management and formulating for low VOC coatings. The technical program will also include Roon Award Competition papers, the *American Paint & Coating Journal/A.F.* Voss Award Competition papers, and international papers.

The highlight of the Annual Meeting is the Mattiello Memorial Lecture, to be delivered by Dr. Richard R. Eley, Senior Scientist at The Gidden Company. The Mattiello Lecture, which concludes the Annual Meeting technical program, is scheduled for Friday morning at 10:30 a.m.

## FSCT PAINT INDUSTRIES' SHOW

### THE COATINGS INDUSTRY'S "MAIN EVENT"

The largest coatings-related exhibition in the world - the FSCT Paint Industries' Show - will be held in conjunction with the Annual Meeting at the Ernest N. Morial Convention Center - New Orleans. More than 270 supplier companies to the coatings manufacturing industry will be present to discuss their newest products and services. In over 90,000 sq. ft. of exhibits there will be displayed a wide variety of raw materials, production equipment, containers and filling equipment, laboratory apparatus, and testing devices for the paint and coatings producer.

Key personnel from the top

technical and sales staff of supplier companies will be available to provide attendees with an opportunity to learn of the latest developments in their products and services.

Exhibit hours will be "Wednesday, October 12 - 10:00 a.m. - 5:00 p.m.; Thursday, October 13 - 9:00 a.m. - 5:00 p.m.; and Friday, October 14 - 9:00 a.m. - 12:00 Noon.

For more information contact Federation of Societies for Coatings Technology, 492 Norristown Road, Blue Bell, Pennsylvania 19422-2350, Phone: (610) 940-0777, Fax: (610) 940-0292.

## IS&T'S 48TH ANNUAL CONFERENCE

### "IMAGING ON THE INFORMATION SUPERHIGHWAY"



The 48th Annual Conference of the Society for

Imaging Science and Technology will be held from Sunday, May 7 to Friday, May 12 at the Omni Shoreham Hotel in Washington D. C.

The major theme for the Conference is Imaging and the National Information Infrastructure or NII, which is perhaps better known, metaphorically, as the "Information Superhighway." This massive U.S. government initiative will result in a seamless web of combinations networks, computers, data bases and consumer electronics that will put vast amounts of information at users' fingertips. In keeping with the theme, the organizing committee is devoting a major part of the program to presentations dealing with the ways in which imaging science will be evolving under this scenario.

A series of full and half-day tutorials will be presented on Sunday, May 7. The plenary session on Monday morning will feature addresses by

prominent government and industrial experts on the Information Superhighway. The technical papers will cover the usual broad range of topics in imaging science and technology. Three Tracks, including the traditional program on silver halides, are planned. State-of-the-art Seminars will be presented on Friday.

We are currently planning to have three concurrent Tracks of paper presentations for four days. Track 1 will focus on the Information Superhighway and, specifically, the effect that its development will have on the future of Imaging Science and Technology. Track 2 will deal with the more conventional silver halide technologies and will feature special sessions on environmental aspects of processing and on the rapidly developing activities in digital silver halide technology. Track 3 will feature major sessions on electronic photography and on image processing and will also include presentations on hard copy. Sessions dealing with historic and museum-related aspects of imaging science will be included in all three Tracks.

For more information, contact the General Chair, James M. Duff, Xerox Research Centre of Canada, 2660 Speakman Drive, Mississauga, Ontario, Canada L5K 2L1, (905) 823-7091, Fax: (905) 822-6984, E-mail: [Duff.xrcc@xerox.com](mailto:Duff.xrcc@xerox.com).

### IS&T'S TENTH INTERNATIONAL CONGRESS ON ADVANCES IN NON- IMPACT PRINTING TECHNOLOGIES

October 30 - November 4,  
1994

Come join us in America's most exotic and international city, New Orleans, Louisiana, for IS&T's Tenth International Congress on Advances in Non-Impact Printing Technologies. New Orleans is filled with unique music, food, art and architecture. The Sheraton New Orleans Hotel is in the heart of it all, overlooking the French Quarter and the mighty Mississippi

River.

The festive atmosphere of New Orleans is fitting for celebrating the 10th Anniversary of a highly successful series of International Non-Impact Printing Congresses beginning with the first Congress held in Venice in 1981 to the recent joint Congress held in Yokohama with The Society of Electrophotography of Japan. The Congresses have become the premier technical meeting for the discussion of non-impact printing technologies with strong international participation. The Congress provides knowledgeable speakers with a forum for presenting state-of-the-art work. Attendees will receive both a broad overview of key technology areas as well as a glimpse into leading-edge developments that result in tomorrow's breakthrough products.

Since 1981, non-impact printing technologies have undergone dramatic improvements in image quality, cost, reliability, printing speed and features. Within the United States, revenues from non-impact printing have increased from ~\$460 million in 1981 to ~\$7.8 billion in 1993. Worldwide revenues are projected to be ~\$18.0 billion in 1998 compared to 1993 revenues of ~\$15.3 billion. The paperless office has not arrived yet! Rapid advances in ink jet, thermal and electrophotographic printing technologies have enabled near-lithographic quality text printing and photorealistic color images for both desktop and production printing environments

More than 175 oral and poster papers from 16 countries will be presented at this Congress. Each day will begin with a Keynote address in a plenary session. Two parallel tracks have been organized into 12 sessions which include Focal Papers for a more in-depth overview of a technology. To encourage the use of video to enhance and enliven presentations, we will make a projection video system available to speakers who indicate a desire to use such for showing computer simulations, printing systems in operation, or events on a microscopic

scale. The Poster Papers sessions at the close of each day will also include Author Interviews of the orally presented papers. The Poster Papers at this Congress represent a significant fraction of the papers (~1/3) and will provide an important new forum for informal and in-depth discussions.

In order to increase the time and ability for getting to know your technical colleagues in non-impact printing, the Congress Committee is planning several special events and tours and has allowed a half-day break for networking. Whether you are interested in learning about the latest advances in non-impact printing, hearing discussions on critical issues, or meeting the leading experts in the field, this is the Congress to attend.

For more information, contact the General Chair, Dr. Dan Hays Xerox Corporation, 0114-23D, 800 Phillips Road, Webster, NY 14580, (716-422-2015; Fax: 716-422-2126), E-mail: [Hays.Wbst128@Xerox.com](mailto:Hays.Wbst128@Xerox.com)

## IS&T/ SID SECOND COLOR IMAGING CONFERENCE VIEWS A MULTI- BILLION DOLLAR INDUSTRY IN MANY COLORS

JULY 6, 1994, WEBSTER,  
NEW YORK



The Second Color Imaging Conference will be held November 15-18 at The Radisson Resort (formerly The Registry), Scottsdale, Arizona. The conference will take an interdisciplinary and interactive look at the creation, transmission, and repro-

duction of color images — a growing multi-billion dollar industry being challenged and transformed by electronic technology. The conference is jointly sponsored by the Society for Information Display (SID) and the Society for Imaging Science & Technology (IS&T).

"For four days in November, the Color Imaging Conference will bring together people who are concerned with color imaging, uniquely uniting professionals with different skills instead of dividing them as specialized conferences do," said Andy Lakatos, president of SID and SID co-chair of the conference's advisory board. "Psychologists and printers; photographers and computer-monitor designers; color scientists, software developers, and electronic hardware designers will all be sharing their perspectives and hammering out solutions to problems that are too complex for any one discipline to solve by itself."

"The Color Imaging Conference is aimed at becoming the premier conference in its field," said Robert Buckley of Xerox Corp., the IS&T conference co-chair. "It is the only conference that brings all pieces of the electronic color imaging puzzle together, and brings those pieces to bear on the practical matters of building color imaging systems and creating applications."

The conference will kick off with half-day tutorials that introduce essential topics: fundamentals of color science, perception, and measurement; digital color reproduction and halftoning; image processing and compression; and color in electronic displays and hardcopy. These tutorials will be followed by three days of presentations — in a single track to encourage all speakers and attendees to come together and bring their widely different perspectives to bear on all significant issues. Among the presentations are eleven invited papers from three continents.

They include:

- "Cross-platform Color Image Fidelity" by Gerald Murch (Xerox)
- "Putting Color Displays to Work" by David Travis (British Telecom)
- "Epiphenomenon of Color" by A. P. Petrov (Russian Research Center)
- "A Colour Reproduction Index" by Robert Hunt (Consultant)
- "Interactive Color Editing" by William F. Schreiber (MIT and Electronics for Imaging)
- "Systematic Processing of Color Image Signals" by Makoto Miyahara (Japan Advanced Institute of Science and Technology)
- "Gamut Mapping: Squeezing the Most out of Your Color System" by Jan Allebach (Purdue University)

A generous amount of time has been allocated for discussion and questions.

A panel discussion — "Color Imaging on the Information Superhighway" — will highlight opportunities and applications, the technical barriers to providing high-quality imagery, and the means for overcoming those barriers.

A poster session will feature electronic presentations — "an appropriate medium", says Xerox's Buckley, "for sharing the latest advances in color science imaging systems, and applications."

For registration and hotel information, contact Pam Forness, IS&T, 7003 Kilworth Lane, Springfield, Virginia 22151, (703) 642-9090, Fax: (703) 642-9094.

## IDRC '94 PAPER SELECTION REVEALS THE FUTURE OF DISPLAY TECHNOLOGY

**SID**

The papers for the International Display Research Conference

(IDRC), being held this year at the Hyatt Regency Hotel, Monterey, California, October 10-13, were selected at an 11-hour meeting of the program committee on June 17, Conference General Chairman Thomas L. Credelle revealed. Credelle is also Director of Marketing for Allied Signal Corporation's Optical Polymer Business.

"The paper-selection process for the conference is revealing," said Credelle. "Specialists from around the world submitted papers on a wide variety of topics in display research and development, and several dozen members of the International Program Committee discussed and voted on each paper. Each accepted paper is a report of its author's current research, which he or she believes to be significant and original — an opinion that has now been endorsed by a diverse committee of leading display professionals. So, these papers provide us with the best window on the future of display science and technology that we are likely to have."

Among the papers selected by the IDRC '94 Program Committee are several on active-matrix liquid-crystal displays (AMLCDs) with thin-film transistors made from polycrystalline silicon, polysilicon, rather than the far more common amorphous silicon. Polysilicon is a higher-quality material than amorphous silicon, which allows the transistor to be smaller. This lets more light pass through each picture element for a brighter image, and the picture elements to be placed much

closer together for a sharper image. Therefore, manufacturers such as Sony and Seiko-Epson are looking to polysilicon for LCD projection displays that may, for the first time, rival CRT projection displays in image brightness and sharpness. Polysilicon AMLCDs are being made with a high-temperature fabrication process, but papers from Philips and Hitachi will evaluate low-temperature processes that could allow polysilicon to be an economical, high-volume display technology.

Invited papers include a survey of electron-source technologies for field-emission displays (FEDs) by Henry Gray of the Naval Research Laboratory. Some industry analysts feel that FEDs could be the up-and-coming display technology that eventually unseats LCDs as the dominant flat-panel technology. The challenge has been making electron sources that are both economical and reliable, and Gray will discuss the state of the art.

Fujitsu Limited makes what is, so far, the world's only commercial full-color plasma display panel (PDP). Akira Otsuka will describe the design of the company's current 21-inch display and the new technologies required to produce PDPs for large-screen, wall mounted, high-definition television (HDTV).

The keynote address will be "The Information Highway and Visual Communications" by Laurence C. Seifert, AT&T Vice President, Global Manufacturing and Engineering. The global information infrastructure is emerging as a powerful force shaping many industries, and a major traffic component on the information highway will be visual communications. The display is what ultimately places the image in front of the consumer, so the highway's success will depend critically on display characteristics.

For registration information, contact Ralph Nadell, Palisades Institute for Research Services, 201 Varick Street, New York, NY 10014, (212) 620-3341.

## EFFECTS IN PLASTICS

**CAD** The Color and Appearance Division and the Chicago Section of the Society of Plastics Engineers announce "Effects in Plastics", a regional technical conference (RETEC) to be held September 20-22, at the Oak Brook Hills Hotel & Resort, in Oak Brook, Illinois.

The objective of this conference is to bring together designers, processors, suppliers and users of color pigments and additives. The conference will present methods of improving the appearance and effects attainable in the coloring of plastics in today's market. Advances in processing of specialty

pigments and additives will also be addressed.

A two-day workshop is dedicated to raising the attendee's level of knowledge of plastics coloring. Hands-on experience will help the attendee understand color, appearance, pigments (colorants), and visual and computer color matching. This activity is separate from the RETEC program and not included with the RETEC registration. For further information, contact Robert Charvat at (216) 835-2011.

There will be table top display space available. Exhibit space is limited and available on a first come, first served basis. Contact Brian West at (615) 457-6700 for details and to register space.

For further information, contact Sharon Ehr, Chroma Corp., at (815) 385-8100, or Aram Terzian, E.M. Industries, at (914) 592-4660 x203.

## NEWS ABOUT MEMBERS

### ISCC TREASURER CHANGES

**P**hilip S. Hunter steps down as treasurer of ISCC after serving three two-year terms, 1988-1994. All ISCC members are indebted to him and to his Secretary, Virginia Baca, for handling their membership accounts and subscriptions to the Wiley journal, COLOR Research and Application. In his other life, Phil is Chairman of the Board of Directors of Hunter Associates Laboratory (HunterLab) founded by his father, Richard S. Hunter, in 1952. His mother, Elizabeth Hunter, still works at the laboratory two days a week. A biography of Elizabeth Hunter was published in the ISCC NEWS No. 347, January/February 1994. Richard Hunter was Chairman Emeritus of the board when he died, January 16, 1991. ISCC had informed him of its plan to present him with the prestigious Godlove Award at the Annual Meeting in New York on May 7, 1991. See ISCC NEWS No. 330, March/April 1991.

The Hunter's elder son, Philip, grew up with the company. He was 10 years old when HunterLab started in 1952 as a consulting firm in Richard's boyhood home in McLean, Virginia. Several years later the company began manufacturing in the same house. Phil started working for the company as a youth; emptying trash cans, packing instruments, and running errands after school.

While Phil was at college, manufacturing was expanded by digging out the basement. He achieved a BBA from George Washington University in 1964 and an MBA from Columbia University in 1966. Having taken AFROTC all through school, he joined the Air Force as a 2nd Lieutenant. Assigned to the Controller's Office at System Command Headquarters at Andrews AFB, he spent four years honing administrative skills in personnel, travel, and other departments. He made Captain by the time he mustered out in 1970.

Phil joined Nuclear Fuel Services, a reprocessor of spent nuclear reactors fuel rods, until the company abandoned that business in 1973 due to an ever-

tightening regulatory environment. He rejoined HunterLab as Production Manager. At that time the lab was about \$1.5 million in sales and 50 people, and occupied a building in Fairfax, Virginia. In 1975, the D54 spectrophotometer was introduced. HunterLab again outgrew its space and moved to Reston in 1979. In 1987 the company moved across the street into its present building. Phil became Board Chairman in 1990.

Phil believes the company must grow or die. Phil has seen the company grow from a kitchen to a campus. He intends to move the company further and make it the leader in the emerging color technologies of vision, formulation, and handheld instruments, while maintaining its advantageous position in on-line and laboratory equipment. Phil also feels the need to grow personally. Having raised a family and run a company, he has lately become an IRF rated pilot, and spends much of this spare time flying.

## NEW MEMBERS

We are please to list the latest members to the ISCC. Welcome!

Mr. Joseph P. Aernouts  
III Uniform Color Company  
942 Brooks Ave.  
Holland MI 49423 USA

Mr. Werner H. Bonitz  
Liz Claiborne Inc.  
1441 Broadway  
New York NY 10018 USA

Mr. David M. Burns  
3M Company  
553-1A-01 3M Center  
St. Paul MN 55144-1000 USA

Ms. Michele A. Cacko  
Indiana University of Pennsylvania  
686 Mark Avenue  
Williamsport PA 17701 USA

Mr. Douglas Cechovic  
Reed Minerals Harsco Corporation  
8149 C Kennedy Avenue  
Highland IN 46322 USA

Ms. Sara B. Chase  
Preservation Consultant  
1 Grassland Street  
Lexington MA 02173 USA

Mr. William Dawes  
Dawes Technical Service  
13020 Birchleaf Road  
Chester VA 23831 USA

Mr. Michael DiCosola  
X-Rite, Inc.  
3100 44th Street S.W.  
Grandville MI 49418 USA

Mr. Jerry Droll  
Flex Products, Inc.  
2793 Northpoint Parkway  
Santa Rosa CA 95407-7350 USA

Dr. Leo M. Hurvich  
University of Pennsylvania  
Dept. of Psychology  
3815 Walnut Street  
Philadelphia PA 19104-6196 USA

Dr. Byron D. Jordan  
Pulp&Paper Research Institute Canada  
570 St. John's Blvd.  
Pointe-Claire QC H9R 3J9 Canada

Mr. Gary M. Lesley  
Head Lites Corporation  
2415 Ventura Drive  
St. Paul MN 55125 USA

Mr. George R. Lychock, III  
X-Rite, Inc.  
3100 44th Street, S.W.  
Grandville MI 49418 USA

Ms. Linda P. McHugh  
Stork Screens America, Inc.  
PO Box 26458  
Charlotte NC 28221 USA

Mr. Lawrence L. Micek  
H. B. Fuller Co.  
Industrial Coatings Div.  
3200 Labore Road  
Vadnais Heights MN 55110 USA

Ms. Sally A. Ross  
DuPont Canada Inc.  
377 Fairall Street  
Ajax ON L1S 1R7 Canada

Dr. David Shklover  
3029 Brighton 12th St. #A4  
Brooklyn NY 11235 USA

Mr. Dan Waldon  
BASF Corporation  
1110 Carbon City Road  
PO Drawer 1297  
Morganton NC 28680-1297 USA@

## O T H E R N E W S

### SDC INTERNATIONAL CONFERENCE IN HONG KONG

#### COLORATION - DYNAMIC RESPONSE AND THE ENVIRONMENT

This prestigious event will be held at the Kowloon Shangri-La Hotel in Hong Kong on November 1-3, 1994. The conference will be opened by Mr. Peter

J. Smith, President of the Society. Mr. Kenneth Fang, Chairman of the Textile Council of Hong Kong, will also give an opening address.

The first (Tuesday November 1) will be devoted to "Dynamic Response" and the speakers will be Mr. P. S. Collishaw (Zeneca Colours), Mr. E. S. Bohrer (Thies GmbH & C.), Mr. K. Cheuk (Fong's National Engineering Co. Ltd.), Mr. Yoshiki Akatani (Nippon Kayaku), R. Y. S. Wai (China Dyeing), Mr. G. J. Peters (Stork Screens BV), Dr. K. C. Lau (Daticolor Int.) and Dipl. Ing. K. van Wersch (A Monforts).

The rest of the technical sessions

(Wednesday and Thursday, November 2 and 3 ) will cover "The Environment". The speakers will be : Mr. K. Roehrig, (Hoechst China Ltd.), Mr. C. Aurich (Gaston County), Dr. W. F. Kwok (Tubingen Chemical), Mr. N. Barrett (Allied Colloid Ltd.), Dr. D. Lau (Environmental Protection Dept), Mr. C. M. Lin HKPC), Dr. O. Annen (Sandoz products), Mr. D. Cockburn (James Robinson Ltd), Mr. Jong-fu Wu (China Textile University), Mr. G. Horstmann (Ciba-Geigy), Dr. B. R. Baird (DuPont Fibers), Dr. P. R. Brady (CSIRO).

There will be a Gala Dinner on Wednesday November 2 when the guest speaker will be Mr. K. Fang and Mr. P. J. Smith will present the diplomas and medals.

There will be a two-day post-conference tour including factory visits and sightseeing in China, in the Guangdong Province.

The climate in Hong Kong is subtropical and in November the average temperature is around 22°C. Humidity is 73% with mostly clear and sunny days.

Further details are available from Ms. Betty So, HKPC, Fax: 852 788 5671 and Mrs. Anita Hallan, SCD, fax 0274 392888.

*The Society of Dyers and Colourists  
Press Release*

## BOOK REVIEW

ASTM Standards on Color and Appearance Measurement, American Society for Testing and Materials, 4th Edition, 1994, pp.446 + xviii. Price \$69.

**ASTM** This book contains 74 ASTM standards devoted to color and appearance measurement. It also lists 107 ASTM standards in which color is involved to some degree. Individuals who have used the 3rd edition will be interested to learn that the 4th edition contains 8 new standards and 26 that have been

revised since the 3rd edition was published three years ago. For me this is enough to justify purchase of a copy of the 4th edition. Anyone just coming into the field of appearance measurement or evaluation will find that having a copy on his desk can be very helpful. One of the very helpful ASTM standards for anyone, old-timers or newcomers, is E 284, Standard Terminology of Appearance. It contains 500 terms and their definitions approved by the Terminology Subcommittee.

People not familiar with previous editions should study the introductory text and the seven tables that follow. The standards in this book are listed in alpha-numeric order as are the standards in all volumes of the Annual Book of ASTM Standards as it is published; there need be no consecutive sequence and the numbers of withdrawn standards are not reused.

Richard Hunter conceived the idea of having a compilation of appearance standards and he spent many hours putting together the 1st edition in 1987 and the 2nd edition in 1987. Regrettably his health began to fail and he died in January 1991. The 3rd edition, published in July 1991, was supervised by his Hunterlab colleague Richard Harold, Chairman of the Publications Subcommittee of Committee E-12 on Appearance. Harold quite appropriately recommended that the 3rd edition be dedicated to Richard Hunter. I regret to find that none of this history is to be found in the 4th edition.

*Harry K. Hammond*

## "SMART COLOR '94"

### A SHORT COURSE

SMART COLOR '94 will be offered at Stanford University on September 12-13th, 1994. The course is designed for engineers, developers, and senior management interested in the production and acquisition of color images.

The two-day short course will be taught by Dr. Roy Berns, Director Munsell Color Science Lab, Rochester

Inst. Tech., Dr. Robert Hunt City University, London, Dr. Louis Silverstein, VCD Sciences, Dr. Gary Starkweather, Apple Computer, Dr. Brian Wandell, Stanford University.

The course covers: (a) Color engineering and standards (b) Cross-media matching (c) Image quality metrics (s) Color software (e) Design and analysis of smart color peripherals (f) Smart color imaging in the digital office.

Smart Color '94 will be held on September 12th and 13th, a Monday and Tuesday, prior to the Seybold Seminars in San Francisco. The Smart Color '94 conference is held on the Stanford University campus, just 45 minutes south of San Francisco.

The cost for the two day seminar is \$745. The fee includes refreshments, lunches, seminar notes prepared by the speakers, and the book "Color Management Systems" by R. Burger, VP, Xerox Digital Desktop Systems. Corporate discounts are available for multiple registrations.

For more information about Smart Color '94 please contact: Smart Color '94, Jordan Hall, Building 420 Stanford University, Stanford, CA 94305-2130, Phone: (415)-715-6275, (brian@psych.stanford.edu).

## GOVERNMENT MICROCIRCUIT APPLICATIONS CONFERENCE REVEALS OPPORTUNITIES FOR DUAL-USE TECHNOLOGIES

GOMAC '94, the 1994 editions of the Government Microcircuit Applications Conference, will be held November 7-10 at the Town and Country Hotel, San

Diego, California. The conference will focus on dual-use technologies — technologies that can be used for both commercial and Government applications.

“The concept of dual use stems from dramatic changes in the economic and technological landscapes,” says Harry Weaver of Sandia National Laboratories, the Conference Chair. “Shrinking budgets make it difficult to fund high-technology R&D initiatives purely as Government-funded projects with only Government applications in mind. And the acceleration of commercial technology development is now producing commercial product generations that follow each other faster than Government-funded product generations possibly can. The recognition of these changes has led to a revolutionary rethinking in the ways Government agencies should develop technologies for their own needs. The rethinking involves adapting commercial technology to Government needs and directly assisting commercial manufacturers to develop strategic technologies needed for Government and civilian use. The dual-use philosophy requires a striking technological and economic reorientation from all parties, and opens exciting new opportunities for commercial firms. All of this requires new knowledge and new contacts, and that’s what GOMAC ’94 is designed to provide.”

“Civilian Technology for Economic Growth: A New Role for Federal R&D” by Dr. Arati Prabhakar, Director of the National Institute for Standards and Technology (NIST) is the keynote address that kicks off the main portion of GOMAC ’94. This will be followed by the Jack S. Killby Lecture Series:

- “A Defense Technology Goes Full Circle” by Loney R. Duncan of Rockwell International discusses a stunningly successful dual-use project, the Department of Defense Global Positioning System (GPS).

- “The Electronic Battlefield and Dual-Use Applications” by Donald P. Jenkins, ARPA’s Deputy Director for Defense Healthcare Technologies,

carries dual use to the medical arena, and introduces a session of four invited papers on electronics in medicine.

The remainder of the conference focuses on technical sessions, including State and Local Government Electronics, Micromechanics and Microsensors, Partnership and Dual-Use Technologies, MMIC, Military Use of Solid Encapsulated Microcircuits, Neural Network Applications and Hardware, Radiation-Hardened Electronics, Ultra Large Scale Integration (ULSI) and Wafer Scale Integration (WSI), and Optoelectronics.

There will be an invited session from the Hardened Electronic and Radiation Technology (HEART) Conference in preparation for the co-location of HEART and GOMAC beginning in 1996. On Monday, preceding the technical sessions, there will be two half-day tutorials: “Designing for Six Sigma Manufacturability” by Ron Randall (Texas Instruments) and “Advances in the Capabilities of Display Technologies” by Robert Miller (Army Research Laboratory, Fort Monmouth). In addition, there will be one classified session.

Exhibitors include Allied-Signal Aerospace, Harris Semiconductor, Hughes Aircraft, Martin Marietta Laboratories, Honeywell, Quickturn Design Systems, Synopsis, Cascade Design, Lansdale Semiconductor, the National Security Agency, Raytheon, and Texas Instruments.

For registration information, contact Mark Goldfarb, Palisades Institute for Research Services, 1745 Jefferson Davis Highway, Suite 500, Arlington, VA 22202, (800) 787-7477, (703) 413-3891, Fax (703) 413-1315. For exhibit information, call Erika Suresky at (212) 620-3375, Fax (212) 620-3379.

GOMAC Press Release

## YOUTH ART MONTH FLAGS FLY IN D.C. DURING MARCH

This March, the Council for Art Education, Inc. held its eighth annual National Youth Art Month Event, “School Flags Across the U.S....Flying High.” To celebrate National Youth Art Month 1994, State Youth Art Month Chairpersons across the country held student flag design programs. Themes selected were representative of the individual state and the spirit of Youth Art Month. A design was selected from each state and made into a flag. These flags, designed by students of all ages and from all parts of the U.S., flew throughout the month of March at The Pavilion at the Old Post Office in Washington, D.C. After flying at The Pavilion during Youth Art Month, the flags were moved to Baltimore, Maryland, where they flew at the convention of the National Art Education Association.

National Youth Art Month, established in 1961 by The Art & Craft Materials Institute, Inc. (ACMI) in conjunction with the National Art Education Association, is held annually during the month of March. It promotes the value of art and art education and encourages support for quality school art programs. ACMI, in addition to sponsoring National Youth Art Month, sponsors a certification program to ensure that art materials are non-toxic or labeled with appropriate health warnings and safe use instructions. ACMI receives support for Youth Art Month from the National Art Education Association, another sponsor, in the form of publicity, awards selection, literature distribution, exhibit space and workshops, and participation by its members. It is also supported by the General Federation of Women’s Clubs and by The SHIP, an organization of exhibitors at the National Art Education Association

Convention. The Council for Art Education, Inc. was formed in 1983 to assist the sponsors of Youth Art Month in raising funds for the total Youth Art Month program.

*Council for Art Education, Inc.  
News Release*

## COLOR RESEARCH AND APPLICATION

In This Issue, October 1994

**CR&A** We begin this issue with two articles on color measurement. There is a continuing need in industry for up-to-date, accurate, and convenient color measurement instrumentation. In all large organizations instrumentation is a major investment. As companies need to replace aging instrumentation, a systematic approach is required for the selection process. The first article in this issue, "Comparative Study of Color Measurement Instrumentation," was written by members of a multi-plant quality improvement team from the Chemical Group at Monsanto. In this article the authors James Rodgers, Kaye Wolf, Norm Willis, Don Hamilton, Ralph Ledbetter, and Curtis Stewart, who work in several different locations, describe the analytical methods that their team used to evaluate various color measurement systems. Using a system of three evaluation matrices [one matrix comparing instrument parameters, one decision matrix ranking an instrument on each criteria category, and new product matrix accentuating the relative importance of one criteria category over another] the team was able to select the color measurement system that best satisfied the requirements of their facility and product line.

While the color measuring instrumentation is important, so, also, are the standards used to calibrate the instruments. The Council for Optical Radiation Measurements set, as a highest priority, the need for a comprehensive set of standard reference

materials for the visible and near-infrared spectral reflectance factor. While the National Institute of Standards and Technology (NIST) is a source for primary standards.

There is a great need for calibrated materials for standards. The second measurement article is by Lisa Reniff of the Munsell Color Science Laboratory at Rochester Institute of Technology. In "Transferring the 45/0 Spectral Reflectance Factor Scale," she describes a method for transferring the spectral reflectance factor scale to calibrated materials using a statistical method to correct for the most pervasive systematic errors in the measurement process. Through this process the laboratory is capable of obtaining "NIST traceable" calibration standards of the 45/0 spectral reflectance factor scale.

For our next articles let us turn from color measurement instrumentation to how humans see color. Last year Yasuhiro Kawabata examined the spatial integration properties in vision with chromatic stimuli. He reported in this journal that the critical area of spatial integration was larger for equiluminous chromatic stimuli than for luminance stimuli and that the critical area became smaller as the chromatic saturation of the adaptation field was increased. [See Vol. 18, 390-398, 1993]. Now Dr. Kawabata has extended his studies from observers with normal color vision to observers with dichromatic vision. Since it is known that the saturation coefficients of dichromats are different from those of normal for long and middle wavelengths regions, then it is possible that for chromatic stimuli, spatial integration characteristics of dichromatic vision might also prove to be different from those of normal observers. In "Spatial Integration with Chromatic Stimuli in Dichromatic Vision," the results of this new study are reported.

Our next article also concerns human color vision; however Jose Caivano frames color vision in the total aspect of appearance that deals with the sensations aroused by light. An earlier

article by the same author [Vol. 16, 258-268, 1991] introduced the term *Cesia* for total appearance of which color was one of the dimensions. In "Appearance (*Cesia*): Construction of Scales by Means of Spinning Disks", Caivano proves that the geometric attributes of appearance can be organized in a coordinate system and synthetic stimuli for these attributes can be produced. The primary sensations examined are transparency, specular reflection, translucence, diffuse reflection, and absorption.

From the time that Neville Smith began his doctoral studies at the University of Teeside, he has been intrigued with the conversion of one color order system to another by the use of computers. This research has allowed him to examine various systems in terms of a reference system leading to insights as to how and where the systems differ. In "Comparison of the Colorcurve and SCA-241 Colour Order Systems Using the OSA-UCS Model," Dr. Smith joins with Fred W. Billmeyer, Jr., to compare the Colorcurve and Swiss Colour Atlas colors on the same basis as the earlier studies of Munsell, NCS, DIN, and Coloroid Systems. The basis selected is the OSA-UCS system. Since the SCA (Swiss Colour Atlas) may be less familiar to some readers, there also is included a short description of the system.

The general articles section of this issue concludes with a short note by Bai, Zeng, Yi, Liao, and Guo entitled "Color Matching in Paints Using a Method of Linear Programming." Using two constant Kubelka-Munk theory and a method of linear programming to develop a data base and compute pigment formulations for coatings, the authors show an effective tool for the industry.

The Industrial Applications section contains an article on a very specific application of color printing. Chemical indicators are available to monitor a wide variety of processes ranging from sterilization to food spoilage. The chemical indicator, usually in the form of a printed or coated surface,

undergoes a change in color or shade when exposed to the environment it is intended to monitor. For example, using such indicators on food packages, it would be possible to know if the food has been exposed to temperatures warm enough to allow spoilage or with slower acting indicators if the food is getting close to spoilage.

In "The Measurement of Colour in Chemical Indicators Applicable to Food Spoilage," G. J. Blake and S. J. Edwards described the use of chemical indicators that are temperature sensitive, but with different rates of color change. They examine the selection of indicators and study their color changes instrumentally to quantify the extent and abruptness of the color change.

The Communications and Comments section of the journal provides space for accelerated publication of new items, as well as short papers that criticize, correct, or otherwise comment on articles previously published in this journal. This month there are seven items in this section falling into the two general categories of discussions on the measurement of color-matching functions of human observers and on the intersections of spectral power distribution curves of metamers. Contributors include Y. Nayatani, M. Fairchild, A. North, R. Kuehni, R. Berns, A. Robertson, J. Worthey, and W. Thornton.

## C A L E N D A R

Please send information on Member Body and other organization meetings involving color with dates, places, and information source to:

Harry K. Hammond, III  
BYK-Gardner, Inc.  
2435 Linden Lane  
Silver Spring, MD 20910  
301-495-7150 FAX 301-585-4067

## 1994

**ASTM COMMITTEE D-20 ON PLASTICS**, Jul. 17-21  
Cincinnati, Ohio. Information: Katharine Schaaf (215) 299-5529.

**INTERNATIONAL SYMPOSIUM**, Jul. 26-28  
Illuminating Engineering Institute of Japan, Tokyo, Japan

**IESNA ANNUAL CONFERENCE**, Aug. 7-11  
Illuminating Engineering Society of North America, 88th Annual Conference, Doral Resort & Country Club, Miami, Florida. Information: Valerie Landers (212) 705-7269.

### **INTERNATIONAL CONFERENCE ON COLOR EDUCATION**, Aug. 17-19

University of Industrial Arts, Helsinki (UIAH), Helsinki, Finland. Information: Harald Arnkil (+358 0) 799 827, 75631, Fax (+358 0) 7563 223.

### **4TH INTERNATIONAL CONFERENCE ON VISUAL SEARCH**, Aug. 29-Sep. 1

The Fourth International Conference on Visual Search, Koningshof, Eindhoven, Netherlands. Information: Prof. A.G. Gale, Applied Vision Research Unit, University of Derby, Chevin Avenue, Western Road, Mickleover, Derby, DE3 5GX.

### **1994 EUROPEAN CONFERENCE ON VISUAL PERCEPTION**, Sep. 4-8

Institute for Perception Research, Veldhoven, Netherlands, Information: H. de Ridder, P.O. Box 513, 5600 MB Eindhoven, The Netherlands.

### **JOHN DALTON CONFERENCE**, Sep. 9-13

An International Color Vision Meeting to commemorate the 200th anniversary of Dalton's first description of his own color vision defect, UMIST, Manchester. Information: Dr. C. Dickinson, UMIST, P.O. Box 88, Manchester

### **COLOR COMMUNICATION**, Sep. 12-13

Jointly organized by The Colour Measurement Committee of the Society of Dyers and Colourists, The National Physical Laboratory, Spectrophotometry and Colorimetry Club, and The Department of Textiles, UMIST, Manchester, UK.

### **ISO/TC 61 PLASTICS**, Sep. 17-24

Tokyo, Japan

### **IS&T PHOTOFINISHING TECHNOLOGY**, Sep. 19-21

Society for Imaging Science & Technology, IS&T Minilabs and Photokina, Cologne Germany. Information: Pam Forness (703) 642-9090, Fax (703) 642-9094

### **SPE EFFECTS IN PLASTICS**, Sep. 20-22

Regional Technical Conference Sponsored by the Color & Appearance Division and the Chicago Section of the Society of Plastics Engineers (SPE), Oak Brook Hills Hotel & Resort, Oak Brook, Illinois. Information: Sharon Ehr, Chroma Corp., (815) 385-8100 or Aram Terzian, E.M. Industries (914) 592-4660 X203.

### **CMG - CONFERENCE**, Sep. 25-27

Color Marketing Group International Color Directions Conference, Sheraton Bal Harbour, Bal Harbour, Florida. Information: Katie Register (703) 329-8500, Fax (703) 329-0155.

**COLOR AND COLORIMETRY, Sep. 29-Oct. 1**  
Fourth International Symposium of Colour and Colorimetry, Slovene Centre for Color, University of Maribor, Maribor, Slovenia. Information: (+3862) 25 461, Fax (+3862) 255 013.

**OSA - ANNUAL MEETING, Oct. 2-7**  
Optical Society of America Annual Meeting, Dallas, Texas. Information: OSA Meetings Department (202) 416-1980.

**INTERNATIONAL DISPLAY RESEARCH CONFERENCE, Oct. 10-13**  
Society for Information Display, Advisory Group on Electron Devices, and IEEE Electron Devices Society, Hyatt Regency Hotel, Monterey, California. Information: Thomas Credelle, General Chair, (408) 862-7271.

**FSCT ANNUAL MEETING AND PAINT SHOW, Oct. 10-14**  
Federation of Societies for Coatings Technology, New Orleans. Information: FSCT, (610) 940-0777, Fax (610) 940-0292.

**AATCC - CONFERENCE AND EXHIBITION, Oct. 11-14**  
International Conference and Exhibition, American Association of Textile Chemists and Colorists, Convention Center, Charlotte, North Carolina. Information: AATCC (919) 549-8141.

**USNC/CIE ANNUAL MEETING, Oct. 16-18**  
United States National Committee of CIE, San Diego, California. Information: Jonathan Hardis, NIST (301) 975-2373, Fax (301) 840-8551.

**GATF/NSTF ANNUAL CONFERENCE, Oct. 16-19**  
Graphic Arts Technical Foundation, Saddlebrook Resort, Tampa, Florida. Information: (412) 621-6941, Fax (412) 621-3049.

**10th INTERNATIONAL CONGRESS ON ADVANCES IN NON-IMPACT PRINTING TECHNOLOGIES, Oct. 30- Nov. 4**  
IS&T, Sheraton Hotel, New Orleans, LA. Information: IS&T (703) 642-9090, Fax (703) 642-9094.

**SDC INTERNATIONAL CONFERENCE ON COLORATION - DYNAMIC RESPONSE AND THE ENVIRONMENT, Nov. 1-3**  
The Society of Dyers and Colourists, Kowloon Shangri-La Hotel, Hong Kong. Information: Ms. Betty So, HKPC, Fax (852) 788-5671 or Mrs. Anita Hallam, SDC, Fax (0274) 392888.

**GOMAC '94, Nov. 7-10**  
Government Microcircuit Applications Conference, Town and Country Hotel, San Diego, California. Information: Mark Goldfarb, Palisades Institute for Research Services, (800) 787-7477, Fax (703) 413-1315.

**ASTM COMMITTEE D-20 ON PLASTICS, Nov. 14-17**  
Phoenix, Arizona. Information: Katharine Schaaf (215) 299-5529.

**IS&T/SID COLOR CONFERENCE, Nov. 15-18**  
2nd Color Imaging Conference: Color Science, Systems, and Applications, Sponsored by Society for Information Display (SID) and Society for Image Science & TEchnology (IS&T), The Radisson Resort, Scottsdale, Arizona. Information: Pam Forness (703) 642-9090, Fax (703) 642-9094.

**ADVANCES IN PHOTOMETRY, Dec. 1-3**  
CIE Expert Symposium on Advances in Photometry, Lighting Quality and Energy Conservation, CIE Central Bureau, Vienna, Austria. Information: CIE (+43-1) 714-3187, Fax (+43-1) 713-0838.

## 1995

**ASTM COMMITTEE D-1 ON PAINT, Jan. 22-24**  
San Antonio, Texas. Information: Scott Orthey (215) 299-5507.

**ASTM COMMITTEE E-12 ON APPEARANCE, Jan. 25-27**  
Phoenix, Arizona. Information: Bode Buckley (215) 299-5599.

**ISCC WILLIAMSBURG CONFERENCE, Feb. 12-15**  
Pan-Chromatic Conference, Inter-Society Color Council Williamsburg Conference, Williamsburg, Virginia. Information: Dr. Steven A. Shafer (412) 268-2527.

**ASTM COMMITTEE D-20 ON PLASTICS, Mar. 12-16**  
Denver, Colorado. Information: Katharine Schaaf (215) 299-5529.

**TAGA ANNUAL CONFERENCE, Apr. 2-5**  
Technical Association of the Graphic Arts Annual Technical Conference, Orlando, Florida. Information: Karen Lawrence (716) 475-7470.

**ISCC ANNUAL MEETING, Apr. 23-25**  
Color And Textiles, Inter-Society Color Council with American Association of Textile Chemists and Colorists, Holiday Inn Four Seasons, Greensboro, North Carolina. Information: Ann Laidlaw (919) 274-1963.

**CMG - CONFERENCE, May 14-16**

Color Marketing Group International Color Directions Conference, Fairmont Hotel, Dallas, Texas. Information: Katie Register (703) 329-8500, Fax (703) 329-0155.

**CORM 95, ANNUAL MEETING, May 15-17**

Council for Optical Radiation Measurements, Ottawa, Ontario, Canada. Information: Norbert Johnson (612) 733-5939, Fax (612) 733-6211.

**ASTM COMMITTEE E-12 ON APPEARANCE, Jun. 21-23**

Denver, Colorado. Information: Bode Buckley (215) 299-5599.

**ASTM COMMITTEE D-1 ON PAINT, Jul. 9-13**

Atlanta, Georgia. Information: Scott Orthey (215) 299-5507.

**ASTM COMMITTEE D-20 ON PLASTICS, Jul. 9-13**

Lake Como, Wisconsin. Information: Katharine Schaaf (215) 299-5529.

**OSA - ANNUAL MEETING, Sep. 10-15**

Optical Society of America Annual Meeting, Portland, Oregon. Information: OSA Meetings Department (202) 416-1980.

**AATCC - CONFERENCE AND EXHIBITION, Oct. 8-11**

American Association of Textile Chemists and Colorists, Hyatt Regency, Atlanta, Georgia. Information: AATCC (919) 549-8141.

**CIE 23rd QUADRENNIAL MEETING, Nov. 1-3**

Division Meetings, Nov. 6-8  
International Commission on Illumination (CIE), Vigyan Bhavan Conference Complex, New Delhi, India. Information: Jonathan Hardis, Secretary USNC/CIE (301) 975-2373, Fax (301) 840-8551, E-mail "hardis@onyx.nist.gov"

**CMG - CONFERENCE, Nov. 5-7**

Color Marketing Group International Color Directions Conference, Phoenix, Arizona. Information: Katie Register (703) 329-8500, Fax (703) 329-0155.

**ASTM COMMITTEE D-20 ON PLASTICS, Nov. 13-16**  
Norfolk, Virginia. Information: Katharine Schaaf (215) 299-5529.

**1996****ASTM COMMITTEE D-1 ON PAINT, Jan. 21-24**

Fort Lauderdale, Florida. Information: Scott Orthey (215) 299-5507.

**ASTM COMMITTEE E-12 ON APPEARANCE, Jan. 22-24**

Fort Lauderdale, Florida. Information: Bode Buckley (215) 299-5599.

**ASTM COMMITTEE D-20 ON PLASTICS, Mar. 18-21**

Orlando, Florida. Information: Katharine Schaaf (215) 299-5529.

**TAGA ANNUAL CONFERENCE, Apr 28-May 1**

Technical Association of the Graphic Arts Annual Technical Conference, Dallas, Texas. Information: Karen Lawrence (716) 475-7470.

**ISCC/ASTM ANNUAL MEETING, May 5-7**

Orlando, Florida. Information: Nick Hale (813) 591-1501.

**ASTM E12 MEETING, May 8-10**

Orlando, Florida. Information: Nick Hale (813) 591-1501.

**CMG CONFERENCE, May 5-7**

Color Marketing Group Conference, Sheraton New Orleans, New Orleans, Louisiana. Information: Katie Register (703) 329-8500, Fax (703) 329-0155.

**ASTM COMMITTEE D-1 ON PAINT, Jun. 23-26**

San Francisco, California. Information: Scott Orthey (215) 299-5507.

**ASTM COMMITTEE E-12 ON APPEARANCE, Jun. 24-26**

San Francisco, California. Information: Bode Buckley (215) 299-5599.

**AATCC - CONFERENCE AND EXHIBITION, Oct. 8-11**

American Association of Textile Chemists and Colorists, Opryland Hotel, Nashville, Tennessee. Information: AATCC (919) 549-8141.

**ASTM COMMITTEE D-20 ON PLASTICS, Nov. 18-21**

New Orleans, Louisiana. Information: Katharine Schaaf (215) 299-5529.

**1997****TAGA ANNUAL CONFERENCE, May 4-7**

Technical Association of the Graphic Arts Annual Technical Conference, Montreal or Quebec City, Canada. Information: Karen Lawrence, (716) 475-7470.

**COLOUR '97, May 26-30**

8th AIC Quadrennial Meeting, Colour '97, Executive Committee Meeting on May 25, Kyoto International Conference Hall (KIC), Kyoto, Japan.

**ISCC ANNUAL MEETING, Sep. 14-17**  
Inter-Society Color Council Annual Meeting with Color and Appearance Division of Society of Plastics Engineers. Newport, Rhode Island. Information: Gary Beebe (215) 785-8497.

**AATCC - CONFERENCE AND EXHIBITION, Sep. 28- Oct. 1**  
American Association of Textile Chemists and Colorists, Marriot Marquis, Atlanta, Georgia. Information: AATCC (919) 549-8141.

## 1998

**TAGA ANNUAL CONFERENCE, May 3-6**  
Technical Association of the Graphic Arts Annual Technical Conference, Chicago, Illinois. Information: Karen Lawrence (716) 475-7470.

**AATCC - CONFERENCE AND EXHIBITION, Oct. 4-7**  
American Association of Textile Chemists and Colorists, Philadelphia, Pennsylvania. Information: AATCC (919) 549-8141.

## 1999

**TAGA ANNUAL CONFERENCE, May 2-5**  
Technical Association of the Graphic Arts Annual Technical Conference, Philadelphia, Pennsylvania. Information: Karen Lawrence (716) 475-7470

**AATCC - CONFERENCE AND EXHIBITION, Oct. 12-15**  
American Association of Textile Chemists and Colorists, Convention Center, Charlotte, North Carolina. Information: AATCC (919) 549-8141.

## OBITUARY

### Warren L. Rhodes 1921 - 1994

**W**arren "Dusty" Rhodes, 73, husband, father and grandfather, was killed in a highway accident near Boulder, Colorado, on Friday, August 12, 1994. The fatal Collision also claimed the life of Dusty's Grandson Taylor, who was 5 1/2 years old, but spared the life of Taylor's mother, Gina Kolb, who was riding with them.

Dusty was a teacher, researcher and consultant in color reproduction in the graphic arts. To those who knew him professionally, Dusty was a thoughtful, patient and intelligent colleague. To those who knew him personally, he was a kind generous and warm friend, full of wisdom and wise counsel. He brought a critical and experienced eye to his work which contributed significantly to the transition of color reproduction into the digital world.

Dusty's interest in the field of color and color reproduction began when he served as a Photographic Specialist in the United States Army Air Force in World War II. After discharge, he ventured out as a Commercial Photographer. Following his graduation from the Rochester Institute of Technology in 1952 with a Bachelors degree in Photographic Science, he was enlisted into their Graphic Arts Research Department where his specialty was color reproduction. He was an inspired and unconventional teacher who stimulated his students to question and think independently. In 1955 he was appointed Head of this RIT Research Department. In 1965, Dusty joined the Webster Research Center of Xerox Corporation as Head of Graphic Arts Research and in 1976 Dusty transferred to Xerox in Pasadena, California, where he continued research in digital color Xerographic copiers and printers. In 1980, Josie, Dusty's wife of 37 years passed away.

After he retired in 1984, Dusty's services as a consultant on color reproduction were in constant demand. As a result, he formed Chromatech Corporation. His colleagues knew him as a man who not only provided expert technical advice, but also gave honest, wise, and fair opinions and counsel. In 1992, he and his wife Geri, whom he had married in 1983, purchased a home in the hills outside Boulder, Colorado, where he continued his consulting work. Although he was very busy, he still found time to enjoy the beautiful country and changing weather and cloud patterns. He especially enjoyed being near the mountains he had enjoyed as a youth.

Dusty was elected a Fellow of the Society Imaging Science and Technology in 1993 for his many contributions in the fields of Graphic Arts Imaging and Color Printing. He was a past President of the Inter-Society Color Council (ISCC) and Past President of the Technical Association of the Graphic Arts (TAGA). He was Active in Those organizations as well as in the International Colour Association (AIC). While associated with the Rochester Institute of Technology, he was active in the International Conference of Printing Research Institutes and in the Graphic Arts Technical Foundation. He contributed numerous technical papers to the periodicals published by those organizations. He had received nine patents. Dusty's contributions are reflected in many Xerox and Fuji Xerox color products.

He is survived by his wife Geri; daughters Anne of Freeville, New York, and Linda of Holmdel, New Jersey; step-daughter Victoria, step-sons Shannon, Jeffery, and Gregory; grandchildren Satya, Adam, Nathan, Matthew, and Ryan. He leaves many friends in the United States, Canada, Japan and Europe.

Cards and condolences may be sent to Mrs. Warren Rhodes, 2626 Crestridge Court, Boulder, CO 880302-9317. (No Flowers, please.) A memorial scholarship fund has been set up at the Rochester Institute of Technology. Contributions in Memory of Dusty may be sent to:

The Warren L. Rhodes Memorial Scholarship Fund  
Rochester Institute of Technology  
Rochester, NY 14623-5603



# J O B S W A N T E D !

## THIS IS A NEW SECTION IN THE ISCC NEWS!

**I**t 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)
3. If you are using a P.O. Box, you must supply a complete address.
4. Neither the ISCC News nor the editors are responsible for any errors.
5. No Agency representing member(s) is allowed.

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!

Our first candidate happens to be our own Editor, who created the idea for this column in the first place. Can anyone out there please help him???

### JOB WANTED

Highly experienced person with expertise in all aspects of appearance properties from marketing and sales background.

Able to adapt to any situation and is willing to relocate and work worldwide.

#### Please contact:

Michael A. Hammel  
P.O. Box 605  
Fairport, NY 14450-0605  
Telephone 716 223 1823  
Facsimile 716 425 2411

### JOB WANTED

Macintosh Expert looking for computer support opportunity in multi-Macintosh environment in Washington, D.C. area.

7 yrs. Experience in graphic design company. Responsibilities included computer support & graphic design.

Abilities include system design, installation, troubleshooting, hardware & software support & training, and graphic design.

#### Please contact:

Jensen Kvarnes  
Rt.1, Box 430, Washington, VA 22747  
Telephone 703-987-8219

ISCC NEWS EDITOR Michael A. Hammel  
 GUEST EDITOR FOR THIS ISSUE PAULA J. ALESSI



meeting reports

Send photo material (black and white if possible) to:

Editor, Michael A. Hammel • ISCC News • P.O. Box 605  
 Fairport, NY 14450

Please send all other materials on diskette as follows to the above address:

MS DOS-ASCII, Q&A, Word Star, Word Perfect (5.25"-1.2 Meg, or 360K)  
 (3.5"- 1.44 Meg or 730K). MACINTOSH-Word, Macwrite, MS Works  
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Or by E-mail transmission send information to "MCSL@ritvax.isc.rit.edu"

If necessary, fax material to (716) 425-2411

**Please note: the deadline for submission of material is the 1st of each even numbered month. Material not received by the 1st will not be printed until the following issue.**



photos



contributions from members

### OFFICERS 1994-1996

Position	Name	Address	Telephone	FAX
President	Mr. Roland L. Connelly	SheLyn, Inc., 1108 Greccade Street, Greensboro, NC 27408	(910) 274-1963	(910) 274-1971
Pres. Elect	Dr. Ellen C. Carter	2509 N. Utah Street, Arlington, VA 22207	(703) 527-6003	(703) 243-3036
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### LIST OF DIRECTORS

#### 1992-1995

Dr. Michael H. Brill	David Sarnoff Research Ctr. CN 5300, Princeton NJ, 08543-5300	(609) 734-3037	
Prof. Robert Chung	Rochester Inst. of Tech., School of Printing, One Lomb Memorial Dr., PO Box 9887, Rochester, NY 14623-0887	(716) 475-2722	(716) 465-7063
Dr. Joel Pokorny	939 East 57th Street, Chicago, IL 60637	(312) 702-1983	

#### 1993-1996

Mr. Gary E. Beebe	Ato Hass North America Inc., P.O. Box 219, Bristol, PA 19007	(215) 785-8497	(215) 785-4315
Mr. Joseph F. Campbell	duPont Automotive Products, 945 Stephenson Hwy, Troy, MI 48007	(313) 583-8207	(313) 583-8316
Dr. Robert T. Marcus	Pantone Inc., 590 Commerce Blvd., Carlstadt, NJ 07072	(201) 935-5500	(201) 896-0242

#### 1994-1997

Mr. Michael A. Hammel	P.O. Box 65 Fairport, NY 14450	(716) 223-1823	(716) 425-2411
Mr. Richard W. Riffel	ColorTec Associates, Inc. P.O. Box 386 Lebanon NJ 08833	(908) 236-2311	(908) 236-7865
Mr. William S. Vogel	10013 Sagefield Dr. Baton Rouge, LA 70818	(504) 261-7107	

### ISCC MEMBER-BODIES

American Association of Textile Chemists and Colorists (AATCC)	Graphic Arts Technical Foundation (GATF)
American College of Prosthodontists (ACP)	The Human Factors & Ergonomics Society
American Society for Testing and Materials (ASTM)	Illuminating Engineering Society of North America (IESNA)
American Society of Interior Designers (ASID)	National Artists Equity Association (NAEA)
American Society for Photogrammetry and Remote Sensing (ASPRS)	National Association of Printing Ink Manufacturers (NAPIM)
The Color Association of the United States, Inc. (CAUS)	Optical Society of America (OSA)
Color Marketing Group (CMG)	Society for Information Display (SID)
Color Pigments Manufacturers Association (CPMA)	Society of Plastics Engineers, Color & Appearance Division
Detroit Colour Council (DCC)	Society for Imaging Science and Technology (IS&T)
Federation of Societies for Coatings Technology (FSCT)	Technical Association of the Graphic Arts (TAGA)
Gemological Institute of America (GIA)	Technical Association of the Pulp and Paper Industry (TAPPI)

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