



Inter-Society Color Council News

Issue 400 Contents

November/December 2002

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Letter from ISCC President

This issue of the *ISCC News* marks the six month anniversary of my term in office as President. Time is moving by swiftly. It will soon be time for our spring meetings. I hope that you have already begun the process of getting approval to attend one or both of them. I have seen the preliminary programs and I can tell you – we have not had programs as good as this in quite some time.

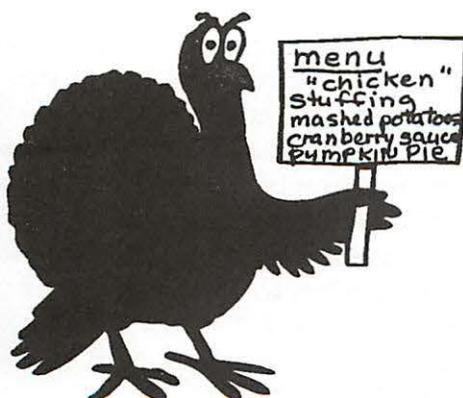
At the annual meeting, last spring I told the attendees that all professional and scientific societies were under a lot of financial pressure. Many of these organizations have attempted to keep their dues down by holding frequent or large conferences. Between the downturn in the economy and the fears and costs of travel, attendance at these meeting has fallen dramatically. One member-body organization told me that a conference which they hold normally generates a substantial portion of their operating income but this past year it resulted in a \$40,000 deficit. Those kinds of losses can be devastating to a professional society.

The ISCC, while smaller and more focused, is not immune to such events. Our cash reserves have shown significant decreases in the past few years as we have hosted technically but not financially successful meetings and as we have worked to enhance and expand this newsletter.

The result is that your current dues, among the lowest in world for a global professional society, no longer cover the cost of printing and mailing the *ISCC News*. At the recent Board of Directors meeting, we took several steps to address this issue. Beginning with the year 2003 dues will increase from \$60 per year to \$75 per year for individual members. There will be proportional changes to many of our other membership categories as well. We are not planning to change the dues for our retired or student members. Our finance committee has projected that this dues increase and the two exciting meetings we are holding, should result in a positive financial year for the Council, the first in at least five years. When your membership renewal arrives in late December or early January, please be understanding of need to keep the ISCC financially sound and continue to offer the *ISCC News* and terrific meetings.

(continued on page two)

Happy Thanksgiving!



The ISCC News Editors wish you all a
Happy Holiday Season.

ISCC Executive Officers

President	Dr. Danny Rich Sun Chemical Research 631 Central Avenue, Carlstadt, NJ 07072 201-933-4500x1144 fax 201-933-5658 richd@sunchem.com
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ISCC Board of Directors

2000-2003

Dr. Robert Buckley	Xerox Corporation 43 Scarborough Pk, Rochester, NY 14625 585-422-1282 fax 585-265-8871 rbuckley@crt.xerox.com
Mr. Alan Kravetz	13 Farm Stead Rd, New Windsor, NY 12553 845-561-0788 fax 845-568-5859 alan.kravetz@verizon.net
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2001-2004

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Dr. Eileen Korenic	Univ. of Wisconsin-River Falls, Physics Dept. CSH, River Falls, WI 54022 715-425-3560 fax 715-425-0652 eileen.korenic@uwrf.edu

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2002-2005

Dr. Karen M. Braun	Xerox Corporation 800 Phillips Rd., MS 128-27E, Rochester, NY 14580 585-422-6380 fax 585-422-6117 kbraun@crt.xerox.com
Mr. Johnny Suthers	Eastman Chemical Company P.O. Box 511, Kingsport, TN 37662-5065 423-229-3263 fax 423-229-4205 jsuthers@eastman.com
Ms. Lisa Thieme	Colwell Industries, Inc. 2605 Marion Drive, P.O. Box 308 Kendallville, IN 46755 260-347-3900x3372 fax 260-347-2079 lisat@colwellind.com

Speaking of the Board of Directors meeting and student members, the Fall Board Meeting was hosted by the ISCC student chapter at the Fashion Institute of Technology/SUNY in Manhattan, New York City. In addition to the business part of our meeting we were treated to a tour of some of the labs, including one with students performing textile dyeings. If you know of a trade school or university with a color related program and they do not have a student chapter have them contact the ISCC Office about getting one started. We currently have chapters at FIT, at RIT and at University of Chicago. We are expecting a good turnout from the Chicago chapter at our annual meeting next April.

Until next year, have a good Holiday Season and I hope to see you in Philadelphia and Chicago next spring.

Danny Rich
ISCC President

The green inserts in this issue include:

Industrial Color Solutions**Final Speaker Program****Registration Forms****Hotel Information****Exhibitor Forms****March 9-11, 2003****Philadelphia, PA****Request for Nominations****Nickerson Service Award**

The Inter-Society Color Council's Nickerson Service Award was established in 1980 to recognize outstanding long-term contributions toward the advancement of the Council and its aims and purposes. The contributions may be in the form of organizational, clerical, technical, or other services that benefit the Council and its members. Candidates for the award must be members of the Council and must have been active in the affairs of the Council. If you would like to nominate a person for this award please contact Robert Marcus at Datacolor International, 5 Princess Road, Lawrenceville, NJ 08648, 609-895-7426, 609-895-7438 (fax), rmarcus@datacolor.com. Nominations must be received before December 20, 2002.

ISCC Welcomes New Members

Louis W. Adams, Jr.	204 Zimmerman Dr., Inman SC 29349
Jean Bernard	Jean Bernard Production, P.O. Box 952, NY, NY 10116 514-943-8353 jbproduction@sympatico.ca
Lorene C. Boettcher	PPG Industries, 5875 New King Court Troy, MI 48098 248-641-2208 248-641-2100 fax lboettcher@ppg.com
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Janet Coope-Epstein	Clairol, 2 Blachley Road Stamford, CT 06922 203-357-5062 203-967-2577 fax coopeepstein.jl@pg.com
Pete Driessen	College of Visual Arts, Uncle Pete's Coloring Book 2205 California St. NE. 502 Minneapolis, MN 55418 612-782-9185 elroydog@bitstream.net
Dale L. Fey	The Colorworks Inc., 3010 Executive Drive Greensboro, NC 27406 336-272-8150 dalefey@busindustries.com
Leslie Harrington	LH Color, 23 Roosevelt Avenue, Old Greenwich, CT 06870 203-637-6868 203-637-2692 fax leslie@lhcolor.com
Kim Kubsch	Global Ideas, Inc., 20929 Ventura Blvd. #47-338 Woodland Hills, CA 91364 818-613-8939 kim@globalretaildetails.com
Nancy A. Lindquist	Artful Living, 9701 S. Leavitt St. Chicago, IL 60643 773-881-4312 nlind42@att.global.net
Roberto Saavedra	University of Guelph, Dept. Food Service Guelph, ON N1G 2W1 519-824-4120 x2036 rsagvedr@voguelph.ca
Mark Sanford	879 Big Oak Road Morrisville, PA 19067 215-736-2753 msanford@voicenet.com
Jason Wagner	912 21st Ave. S Apt. #214 Minneapolis, MN 55404 612-659-1129 optimus_wagner@yahoo.com

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to the ISCC!

2003

**Inter Society Color Council Annual Meeting
and
Symposium on Color & Appearance Instrumentation*
April 13 – 16, 2003
Sheraton Four Points Hotel – Chicago O'Hare Airport – Chicago, IL**

ISCC Annual meeting will be held on April 13–14, followed by SCAI event on April 15–16 that will focus on new instruments, optical models, and other aspects of color and appearance. General sessions, featuring an international line up of speakers, will be combined with “hands-on” workshops, at which the latest color measurement equipment and software will be demonstrated. Manufacturing, production, and R & D personnel should all benefit from participating in this program by way of new and updated instrumentation and networking with others for better understanding of color and appearance issues in the coatings industry.

For presentation in the “Symposium on Color & Appearance Instrumentation”, please submit an abstract to the program chairman, Romesh Kumar, at the following address. Each presentation will be 40 minutes long, followed by ten minutes for discussion. **Final Paper Deadline: January 31, 2003**

Romesh Kumar Clariant Corporation 500 Washington St. Coventry, RI 02816
Tel: 401.823.2161 Fax: 401.823.2750 E-mail: romesh.kumar@clariant.com

Contact for Exhibiting and Registration:

Cynthia Sturke Inter-Society Color Council 11491 Sunset Hills Rd. Reston, VA 20190
Tel: 703.318.0263 Fax: 703.318.0514 E-mail: iscc@compuserve.com

**Co-sponsored by ISCC and Federation of Societies for Coatings Technology*

Registration Information

	Before Feb 28th	After the 28th.
ISCC only	\$150	\$175
SCAI only	\$200	\$250
ISCC & SCAI	\$300	\$350
Students	\$100	\$100

Exhibitors Rate

ISCC & SCAI	(Sun, Mon, Tues evenings)	\$500
Reduced Registration Fee for exhibitors (per person) is		\$150.

Four Points Hotel Chicago O'Hare	Complimentary Hotel Shuttlebus
For Reservations: 1-800-323-1239	to and from airport every 20 minutes.
For special room rate please mention “ISCC”.	

Registration forms are available on www.iscc.org, from the ISCC Office, and will be included in the next issue.

ISCC Annual Meeting—April 13-14, 2003

Call For Papers

INTEREST GROUP I

BASIC AND APPLIED RESEARCH

Join Dr. Joel Pokorny in presenting your 30 minute paper at the 2003 ISCC Annual Meeting in Chicago April 13-14th. Reserve your time following Dr. Joel Pokorny's talk on: "Rod-Cone Interactions Studied With 4-Primary Colorimetry"

Send one-page abstracts of new research efforts dealing within the large framework of "Color & Appearance". Papers dealing with all aspects of research including new instruments, optical models, or other aspects of color and appearance are being solicited.

Please forward your abstract by December 1, 2002

to: Milton I. Hardt, Chair
Color Communications, Inc.
4000 W. Fillmore St., Chicago, IL 60624
milhar@ccicolor.com

For more information, please call 773-475-2576

INTEREST GROUP II

Industrial Applications of Color

Interest Group II presents technical challenges and solutions that the various industries encounter in commercial color applications. Abstracts are currently being solicited for papers to be presented at the April 2003 Annual Meeting to be held jointly with FSCT in Chicago, IL. Topics can include, but are not limited to; color reproduction, color management, quality control techniques and color tolerancing, measurement techniques, color matching, the relationship between color and other physical characteristics, or other color related industrial applications.

Please send a one page abstract by December 15,

2002 to: Britt Nordby, Interest Group II Chair
Degussa Corporation
2 Turner Place, Piscataway, NJ 08855
(732) 981-5433 Fax: (732) 981-5033
britt.nordby@degussa.com

INTEREST GROUP III

Art, Design And Psychology

"Color Science is Creating a Modern-Day Renaissance in Art & Design"

During the Renaissance scientific advancements contributed to a creative revolution in the world of art. Art and science were blended as the roles of artist and scientist became intertwined. Today's advancements in color science have had a similar impact on the work of artists and designers. Abstracts with this theme are being solicited for papers to be presented at the April 2003 Annual Meeting to be held jointly with FSCT in Chicago, Ill. IGIII is particularly interested in presentations demonstrating how technology is being incorporated into the creative process and how technological innovation is being driven by the needs of the artist and designer. Submissions should be received no later than December 15, 2002.

Prof. Margaret Miele
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**Inter-Society Color Council Annual Meeting
& Symposium on Color & Appearance Instrumentation
April 13 – 16, 2003, Chicago, IL**

Preliminary Symposium Speakers (to date) include:

James Valukas

Accurate Dispersions - Chicago IL
*Color Control of Colorants Before
Color Measurement*

Art Springsteen

Avian Technologies LLC - Wilmington OH
*Artifact Standards in Color Measurement:
Selection, Use, and Geometrical Considerations*

Brian Coleman & Walter Grunenwald

Ciba Speciality Chemicals - Newport DE
*Color Matching Software for Plastics from
Colorant Producers Perspective*

Gerhard Wilker

Clariant Corporation - Frankfurt Germany
*Color Matching of Automotive Shades -
A Systematic & Practical Approach*

Jeff Alspach

DuPont Performance Coatings - Troy MI
Progress in SAE J1545 Standard

Robert T. Marcus

Datacolor International - Princeton NJ
*Computer Color Control: Yesterday,
Today & Tomorrow*

Girish Malhotra

EPCOT International - Pepper Pike OH
*In-line measurement and correction of color
& physical properties*

Gorow Baba

Murakami Color Research Lab. - Tokyo Japan
*Measurement and Evaluation of Metal-Flake
and Pearl-Mica Pigmented Paint Surfaces*

Maria E. Nadal and Edward A. Early

National Institute of Standard and Technology -
Gaithersburg MD
Surface Color Measurement at NIST

Edward Early and Maria Nadal

National Institute of Standards and Technology -
Gaithersburg MD
Uncertainty Analysis for Reflectance Colorimetry

Michael Pointer

National Physical Laboratory - Teddington, UK
*Measuring Visual Appearance - A Framework
for the Future*

Roy S. Berns

Rochester Institute of Technology
Rochester NY
The Development of CIEDE2000

R.N. Jagtap and C.K. Nere

Institute of Chemical Technology - Mumbai India
*Coloration of Polypropylene with Interference
Pigments and Effects of Dispersing Agents on
the Optical Properties*

Danny C. Rich

Sun Chemical Corporation - Carlstadt NJ
*Choosing the "best" aperture of illumination
and view for characterizing the color of inks and
print*

Ken Richardson

Instrument Systems - Ottawa Canada
*Flexible Fiber-Based Absolute
Spectrophotometer*

HunterLab Celebrates 50th Anniversary



HunterLab celebrated its 50th anniversary with a celebration dinner/dance cruise aboard the Potomac Spirit in Washington, D.C. on November 2nd inviting all the HunterLab Associates as guests. During the festivities, speeches were made by Phil Hunter, Elizabeth Hunter, Bob Weaver and Dennis Gardner. A major highlight of Phil Hunter's presentation was the fact that nearly 50% of the associates have been with Hunter Lab almost ten years and 50% of those have been there almost 20 years. This year there are also a number of associates who will have been with Hunter 25 years.



Elizabeth Hunter talked about how the company was started and how she was very proud of the results of those early efforts. Bob Weaver, Vice President of HunterLab noted that "Richard and Elizabeth Hunter founded a company with a very unique and generous imprint. To see what is so unique, just look at the naming of the company. The Hunters could have named the company Hunter Color Products, or Hunter Color Systems, yet even though they were just starting and without employees, the company was named Hunter Associates Laboratory, Inc. The Hunters knew that business success would ultimately depend on the employees and this was reinforced by the Company's change to ESOP status. From the beginning, the family's belief in the value of the employee has continued."

Weaver continued, "Reaching the 50th years milestone as a private family (majority) owned manufacturing company is most impressive and we are not just ANY manufacturing company. Well in advance of many famous technology companies, some which have already come and gone, HunterLab was developing and building color information technology. We have been manufacturing technology for over 50 years!"

Richard S. Hunter established HunterLab as a development, testing and consulting firm. A short time later, due to customer requests, the emphasis was shifted to developing, manufacturing and supporting instrumentation. The overall objective of HunterLab has been, and still is, to develop and sell the most effective instruments and services available for the identification, measurement and control of the way things look.

HunterLab strives to build partnerships with their customers in a continuous quest to understand and meet their needs. They thank the thousands of customers worldwide who have given them the opportunity to serve them and renew their commitment to providing superior solutions to current and future color measurement challenges. HunterLab's goal is simple – make their customers successful.

The Inter-Society Color Council congratulates HunterLab in reaching this milestone and also thanks HunterLab for their support of the ISCC by providing office space and as a sustaining member of the ISCC.

Detroit Colour Council Meeting Report

The Detroit Colour Council held its annual Panel Discussion Conference on September 26th at the MSU Management Education Center in Troy, Michigan. This year's topic was "WILL IT LAST? Speed to market vs. Risk-Free Color Introduction", a subject which is of growing interest in the Detroit automotive community because of the increasing pressures to speed up the process of introducing new colors in paints, plastics, and fabrics used in new vehicles.

Terese Schroeder of DaimlerChrysler Corporation, President of the Detroit Colour Council, opened the conference with welcoming remarks and introduced the current officers and Board of Directors. She then presented service awards to two retiring members of DCC, James Grady of Flex Products and James Keiser of DuPont Performance Coatings, in recognition of their many past services to the Board and membership of DCC.

Larry DePaoli of Uniform Color Company, moderator of the conference, introduced the four speakers, who then offered brief overviews of some of the issues involved in setting durability requirements for and assessing the performance of colored materials. Tim Weingartz of Ford Motor Company led off with a brief description of current OEM materials durability requirements and an assessment of their effectiveness. He was followed by Ed Laabs of DaimlerChrysler Corporation, who took a humorous look at his problems in establishing meaningful requirements for UV stability of materials used in vehicle interiors. Brian Thompson of Bayer Corporation then discussed methods for testing the weatherability of organic pigments in plastic materials. Finally, Dick Fisher of 3M Corporation offered his views on the reliability of correlations between accelerated and outdoor weathering test data.

After a brief break, Ms. Schroeder conducted a brief business meeting in which the DCC membership approved modifications to the organization's bylaws to bring them into accord with the current responsibilities of the officers and Board of Directors. Following this, the four speakers were joined by Kurt Scott of Atlas Electric Devices Company in a panel discussion moderated by Mr. DePaoli, taking questions from the audience. In response to a question about whether accelerated weathering tests could be made faster, Dr. Scott

observed that increasing the energy input significantly would lead to failure modes unrelated to real life, and that obtaining results faster would probably require the development and use of more sophisticated analytical methods on test specimens.

In closing, Ms. Schroeder thanked the panelists for their participation and announced upcoming DCC meetings in November (see below) and December (annual Holiday Dinner-Dance). The meeting was followed by a social hour and dinner.

The Detroit Colour Council's next meeting will be held on November 19, 2002, at the Troy Marriott Hotel in Troy, Michigan. Our speaker will be Gaby Kigle-Boeckler of Byk-Gardner USA, who will discuss the issues involved in making instrumental appearance measurements on curved surfaces. Additional details and registration information are available on the DCC website at www.detroitcc.org.

*James G King, Vice President
Detroit Colour Council*

Hunt, Nayar, Fournier Keynote Speakers at 10th CIC

October 7, 2002 - As the organizers of the Color Imaging Conference (CIC) look forward to the tenth running of the event, they find themselves presiding over the world's leading international conference covering color science and color engineering, and their applications. CIC10, which is jointly sponsored by the Society of Information Display (SID) and the Society for Image Science and Technology (IS&T), will be held Nov. 12-15 at the SunBurst Resort Hotel in Scottsdale, Arizona.

"This year's keynote speakers include Dr. W. G. Hunt on Eyeing the Camera, Shree Nayar on Computational Imaging, and Jean-Marc Fournier on Lippman Color Reproduction," said Gabriel Marcu (Apple Computer), SID Technical Program Co-Chair for the conference. "Each of them is well known and highly respected within the color community," he continued. "The Color Imaging Conference has consistently received excellent reviews from participants. With excellent tutorials, outstanding keynote speakers, first-rate papers and posters, we think this year will be the best ever."

Ingeborg Tastl (Hewlett Packard Labs), SID General Co-Chair for the event, added a comment for potential registrants: "Our participants come from academia as well as from industry, from the U.S. as well as from Asia and Europe. You can exchange ideas with people whose books you have read as well as with young, passionate graduate students. Join us for our tenth-anniversary celebration." As part of that celebration, each registrant will receive a CD-ROM with the proceedings for all ten color imaging conferences from 1993 through 2002.

A detailed conference program can be found on the IS&T website: <http://www.imaging.org>. For registration and hotel information, contact the Society for Imaging Science & Technology, 7003 Kilworth Lane, Springfield, VA 22151. 703/642-9090; fax 703/642-9094; info@imaging.org.

The Society for Information Display is an international society devoted to the advancement of display technology, manufacturing, and applications, located at 610 So. 2nd Street, San Jose, Calif. 95112. www.sid.org. The Society for Imaging Science & Technology is an international society devoted to the advancement of image science, image systems, and applications, located at 7003 Kilworth La, Springfield, VA 2215.

DPP 2003 (IS&T)

Europe is following up the smash success of DPP 2001 with a second Digital Production Printing Conference to be held May 18-21, 2003 at the Hilton Barcelona Hotel in Barcelona, Spain. This bi-annual conference is oriented toward end-to-end solutions for digital industrial and production printing end-users. Participants will see presentations by industry leaders from around the globe providing a comprehensive assessment of technology and applications covering the areas of production printing and industrial printing. Manufacturers and converters to publishers and retailers up-to-date information on new technical and commercial developments. DPP 2003 will provide attendees the opportunity to expand their insight into a rapidly developing industry sector and the necessary knowledge to exploit the tremendous gains which digital and on-demand printing provides.

<http://www.imaging.org/conferences/dpp2003>

Color Association of the US (CAUS)

Food in Color Standardization

In the war year of 1915, when the CAUS was founded, the leaders of the silk and wool textile mills who came together to offer an alternative to Paris fashion shades did so by standardizing America's "favorite" 106 colors. Their idea was to determine the most popular hues so that the entire American fashion industry could achieve some measure of coordination.

Fruits and vegetables and other eatables played an important part in their work. Of the 106 hues that were named in the first edition of "The Standard Color Reference of America" 19 were sources from drinks or food. These were cream, maize, apricot, chartreuse, salmon pink, champagne, chestnut, strawberry, plum, prune, egg plant, lemon, orange, raspberry, claret, burgundy, olive, cherry and sage. In a standard that listed pink 1, 2 and 3 and navy 1, 2 and 3 and four light blues, well-known edibles offered ready examples for the task of color standardization.

In the current tenth edition of "The Standard Color Reference," these 19 color standards based on food and drink have been joined by an additional 21: almond green, apple red, caramel brown, cocoa, crab apple, egg shell, honeydew, limepeel, maple sugar, melon pink, mintleaf, paprika, peach, pigeon, pimento, pistachio, redgrape, salmon, shrimp pink, tarragon, and toast brown. These undoubtedly reflect a growing sophistication in both the chromatic and culinary diet of Americans.

Color standards play a significant role in quality control in food items and in their transport. Many commercial companies have parameters for a color standard that establish whether a foodstuff is or is not acceptable. The shipment of granny smith apples, a variety originally grown in Australia, was improved in the 1980s when standards were set for the gradations of green from the apple's loading color to its ripeness shade at arrival.

The Standard Color Reference of America, Tenth Edition is an indispensable guide to the most popular American colors. For anyone working in clothing, in interior, in graphics, in cosmetics or with government specifications, this book of 198 silk swatches (matte or shiny finish) shows all the American standards.

Margaret Walch (CAUS)
(Nov.2001 CAUS News)

Color and Research Application In This Issue December 2002

Metamerism, the phenomenon in which spectrally different stimuli match to a given observer, is a fundamental principle in colorimetry. It has been identified as the cause for great financial losses and hailed as the source of sizable profits in industry. The existence of metameric matches has caused millions of dollars of product to be rejected. However, without metamerism, it would be impossible to reproduce the appearance of a dyed textile in a catalog or a colored picture on an electronic display. In short whole industries would not exist. Our first three articles deal with various aspects of metamerism.

For some materials the color appearance changes as the angle of illumination and view change. These materials are said to be *gonioapparent*. In our next article J. M. Medina Ruiz proposes a means of determining the degree of metamerism for goniochromatic objects. In "Proposed Metameric Indices for Goniochromatic Objects" Mr. Medina formulates a new index and also presents a flop index. This is particularly useful in metallic coatings.

Our next article moves to the textile industry. As I stated in the first paragraph of this column color mismatches have been identified as a major reason for rejection of materials. Observer metamerism (i.e., materials that match to one observer, but not to another) has been a source of conflict between suppliers and customers. The use of instrumental measurements can help avoid such conflicts. Daniel Steen and Daniel Dupont present our next article, "Defining a Practical Method of Ascertaining Textile Color Acceptability." In this article the authors present an innovative way of calculating metameric indices, which when coupled with acceptability equations, allows the agreement rate between visual judgment and automatic selection to be increased.

The relations between color in materials and color of materials as observed on a monitor is crucial to many industries now. In "Visual Color Matching under Various Viewing Conditions" painted patches of color and color on a monitor, and monitor color and printed color patches are compared. Hitoshi Komatsubara, Shinji Kobayashi, Nobuyuki Nasuno, Yasushi Nakajima, and Shuichi Kumada use the color matching data that they developed to evaluation corresponding colors predicted with five different color appearance models. They go

on to optimize the model parameters and introduce incomplete adaptation to minimize the difference in the colors for all the viewing conditions.

In another article dealing with color as it is perceived on a monitor, Michael H. Brill describes a simple algorithm for plotting luminance contour map of the color gamut of an additive-primary display. Studying the gamut of colors that can be produced by a particular monitor provides important information concerning the likelihood of success for color reproduction on that display. The algorithm presented in "Chromaticity Contour Map of the RGB Cube: A Simple Algorithm" can be implemented in a spreadsheet to produce a distortion-free version of the conventional contour map of the color gamut of a display.

In 1999, Tarow Indow published an article in this journal describing a method to define color differences from component differences. In this issue, a more concise and practical description of the procedure is given in the article, "Color Difference Predicted by Color Component Differences."

The next article describes a study of the relationships between CIELAB color parameters and the mineral and chemical composition of commercial talcs. In "Influence of Chemical and Mineralogical Composition on Color for Commercial Talcs" M. Soriano, M. Sánchez-Marañón, M. Melgosa, E. Gámiz, and R. Delgado investigate the causes of color by identifying the influence of each mineral species and chromophore element.

Our final article of this issue reports on a study of the effect of the application of color to the environment on human evolution. In it, Theano Fanny Tosca describes the extension of human consciousness through machine-aided imagery and scientific knowledge. She calls for a new kind of color-light organization of the environment based on the interplay of sensory stimulation and intellectual processes, professional design and user interaction. Don't miss the article "Environmental Colour Design for the Third Millennium an Evolutionary Standpoint."

We close this issue with a number of timely items: two book reviews, three meeting reports, the news announcement that the Inter-Society Color Council presented the 2002 Macbeth Award going to Mark D. Fairchild, and the annual index. Francisco Imai reviews *Colour Imaging, Vision and Technology* edited by Lindsay MacDonald and M. Ronnier Luo. Elaine Becker

reviews *Color Science in the Examination of Museum Objects – Nondestructive Procedures* by Ruth Johnson-Feller. The new CIE publications, *CIE Collection on Glare* and the *CIE Standard S 009 on Photobiological Safety of Lamps and Lamp Systems* are briefly mentioned. Janos Schanda reports on the CIE Symposium on the Visual Environment, its Descriptors and Consequences for Human Endeavour. Mary McKnight tells us about the 2002 ISCC Annual Meeting, and James G. King and Ruth B. Theobald summarize the joint symposium following the ISCC meeting, Color Design Tech II organized by the Detroit Colour Council. Last but not least, because this is the final issue of the year, the annual index is included.

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

Blue Lobsters

Cynthia Sturke's lobster story (ISCC News 399, p. 13) scooped a story by Charles Day in the November *Physics Today* (pp. 22, 23), at least insofar as color is concerned. Day also added that the lobster pigment astaxanthin is a great anti-oxidant and could be very useful medically if it could be made soluble enough in water. More to the subject of color, he enticed the reader with a photo of the rare blue lobster (please look at the following: www.lobster.um.maine.edu/lobster/photoofthemoth/april02.htm). It really is BRIGHT blue, and challenges color-management software: the printed version is brighter and greener than the version on one's computer screen.

Connecting blue lobsters with Day's story was tantalizing but challenging, much like extracting the meat from a Maryland blue crab. Day's caption reads as follows: "Maine lobsters are usually greenish black before cooking. This rare specimen, however, is bright blue as a result of adaptation to a shallow water habitat (Courtesy of the lobster Institute, Orono, Maine)." Adaptation? Already I was interested, both in knowing why these lobsters are blue and how rare they are.

Starting a web search, I stumbled upon www.geocities.com/paraskit/lobsters/lobsters.html,

from which I learned the following: "... a lobster's shell is composed of three pigments: red, blue, and yellow. When one or more of these pigments are missing at birth, a lobster may be red, blue, albino (white), or calico (dark with yellow spots). Blue lobsters occur once in every 3-4 million lobsters. Red lobsters (live ones) occur once in every 10 million. Except for albinos, all the color variations of lobsters turn red when they are cooked." Other websites offered different numbers, and I didn't quite believe the three-pigment hypothesis. So I looked further.

Another article (Commercial Fisheries News - Jan 2000 - Vol. 27, p 14a) is slightly more in line with the astaxanthin story: "... some of the blue, brown, green, red, and black tones can be genetic or they can [...] be influenced by diet, sunlight, and bottom type. For example, if you put a blue lobster in a holding system and its color becomes normal over a period of time, that lobster is undoubtedly not a 'genetic blue.' It was probably blue as a result of a dietary deficiency. [...] A natural-colored lobster fed a diet of squid will turn blue. A lobster deprived of all prey that eat phytoplankton (floating plantlike critters) appears pale blue [...] A live red lobster is red because its genetically based protein-astaxanthin complex is red—not because it has free astaxanthin!"

The now-famous blue lobster (photographed by Leslie Ricker) almost made the cover of *Physics Today*, but ultimately lost to an earthquake-triggered volcano. Volcano and lobster both ended up a parboiled red.

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Note from Office: If you can't access the aforementioned website for the blue lobster picture, follow this path: <http://www.lobster.um.maine.edu/> go to photo of the month, scroll to the bottom, click on photo of the month archives, and choose April. (Actually all the photos of the month are pretty interesting, including one of a yellow lobster.)

Top 10 Car Colors (and why we choose them)

Top car colors in North America

1. Silver 2. Black 3. White 4. Red 5. Blue
6. Green 7. Gray 8. Beige 9. Gold 10. Bronze

New York restaurant manager Kathleen Delaney bought her 2002 Audi all-road Quattro because she finds Audi's shade of green unlike any other on an automobile today — and, she finds it calming. Austin-based filmmaker Christine Irons bought her green Suzuki Sidekick because, due to its color and shape, it reminded her of a frog. She would not have purchased that car in any other color, and she affectionately refers to the car as "Frog." Los Angeles stand-up comedian Mishna Wolff bought a white 1984 Pontiac Fiero with a two-tone brown bottom just last week, after rejecting red and blue options outright, because she considers it "the grooviest thing I'd ever seen."

Speaking to car buyers, regardless of age, occupation or geography, indicates that the color of their cars is more than just a matter of basic aesthetics: It's a deeply personal and emotional decision that can reveal as much about the person as about the car. In fact, Yankelovich and Partners, a marketing consultancy specializing in lifestyle trends and customer targeting solutions, has reported that as many as 40 percent of customers would switch car brands if unable to get the car color they desire. At times, though, consumers are uncomfortable admitting the obvious. New York comedian Moody McCarthy bought a used, silver Honda Civic last year, and notes that, "it's a funny point of the phone chat with the seller, after we've both spent five minutes pretending to know the importance of timing belts, to ask, 'Oh, and what color is it?'"

Silver takes the crown

Trends in car colors have changed over the years, but one undeniable trend of the past few years has been the power of silver, the most popular car color in the world. According to J.D. Power and Associates, over 22 percent of cars purchased in the United States were silver, a figure slightly higher than previous years, and the sleek shade also led the pack in Asia and Europe.

The power of color

While no one is certain why silver has achieved such mysterious and sudden dominance, some hypothesize

that silver, much like black, conveys power and authority, and now that baby boomers are the generation of power, silver illustrates how far they have come. "Silver seems to be the new white," says Karl Brauer, Editor-In-Chief of Edmunds.com. "White has been extremely popular for many years, in sharp contrast to the long-standing popularity of black that dates back to the beginning of automotive history." Ever since the days when black, the only color offered on the Model-T, was dominant, car color has been a strong signifier of personal standing and self-assessment. But, of course, the significance of color extends way beyond the invention of the automobile.

According to professional color therapist Valerie Logan-Clarke, the pigments used to dye fabrics violet or purple in Roman times were very expensive, and were therefore only available to the wealthy. So Romans in high office would wear purple robes, indicating power, nobility and authority. Logan-Clarke also notes how every color has positive and negative attributes. Silver can relate to "feelings of superiority" and "great mental powers."

Green, meanwhile, is seen as relating to the heart, and could signify excessive generosity and sympathy, or, on the other hand, possessiveness and, in accordance with the oft-heard phrase "green-eyed monster," jealousy. So, if one were to meet a potential suitor with a green car, one might be headed for a relationship full of unbridled love and understanding, or one may sink into a tunnel of neediness and despair.

Color also can signify our relationship to the world, both as individuals and as a society. Renee Brodie is the author of two books on color therapy, "The Healing Tones of Crystal Bowls: Heal Yourself with Colour and Sound" and "Let Light into your Heart with Colour and Sound." According to Brodie, exotic colors were favored by wealthy carriage owners in the pre-automobile days. But when the auto emerged, colors were drab, as manufacturers offered few choices. It was only when the automobile became more commonplace and people became more comfortable with the idea of them that individuality emerged and a car's color became a reflection of its owner.

"As cars became commonplace and affordable by all," says Brodie, "the individuality and ego emerged, and cars became a status symbol to reflect the personality and lifestyle of the owner. Those who wanted to be seen

were drawn to brighter colors without actual knowledge of the meaning of color, but it made them feel good.”

Orange you glad you can choose banana?

Car color can signify more than status or personal quirks, however. Brodie notes that the ever-popular black reflects a desire to remain hidden from the world.

The exact opposite of this, however, is noted in the growing reemergence on production lines of colors such as orange and yellow, colors which have not yet cracked the top 10, but which some automakers note are growing in customer desirability. DaimlerChrysler, Ford and GM are all increasing their offerings of orange for 2003 models.

Also, while traditional power colors like silver and black dominate, even those colors are being given new twists, with DaimlerChrysler offering increased variations on silver in 2003, including tinting it with green or blue. While the shift away from reds and blues would seem to signal a move away from flamboyance, such visual extravagance is merely changing in nature, with wider variations of traditional colors being requested by consumers.

“Today’s colors have much more special effects than 10 to 30 years ago,” says Jason Hiselman, Research and Development Manager for mobile airbrush touch-up company Carnica Inc. “Our technicians used to be able to match all factory finishes with just a few different tints. But now, there are so many new pearl flakes, antique finishes and mica colors that many new tints are needed for a correct match.”

So, with such variation on the uptick, what is one to infer about the popularity of car colors? Is the dominance of silver and black a sign that people simply want prestige and respect? Or does the re-emergence of yellow and orange, and the abundance of choices in the variety of tints and shades, signal that people are more complex than that?

The only sure answer is that the color of the car you drive may tell people more about you than you ever intended.

*Larry Getlen
Bankrate.com*

(Larry Getlen is a free-lance journalist and comedian in New York. <http://www.zhet.blogspot.com>.)

Look to the Children.....

While browsing the website of Juniper Hill Elementary School (Framingham, MA), The School of Academic and Creative Discovery, *Color Days Poems, Grade 2* caught my attention. The color combinations are of the students’ own choosing and portray a variety of emotions; from happy to sad, active to dreamy, and from friendly to grouchy. My favorites: “When my days are pink and alive, I really really want to jive (dance).” and “When my days are green and red I feel like a dragon head.” Having learned from Jean Bourges, author and teacher, about the importance of teaching color early in one’s educational experience (as music is taught), it was exciting to see these interpretations of what a “color-filled” day meant to these second graders.

What is important here is that these children are being taught to recognize color as a part of their lives and that color can affect the way they feel. Little do our youth today realize how advanced they are already in the field of color just by their computer capabilities alone. They can change colors on the screen faster than you can pull out a crayon or marker. As Jean says, it is important that color becomes an integral part of our language early on, rather than when one reaches higher education levels. Jean is coming out with a series of books whose topic is how to teach color to K-12. If one can learn early what color is, what to call it, what to do with it, then color starts to take on a new meaning in everyday life. In our world today, colors do play an important part in everything we do (advertising, marketing, home decorating, shopping). Look at how color is the latest marketing tool in food products (green mustard, blue margarine). Much like “Harold and the Purple Crayon”, our imaginations are not limited by the colors we see, only enhanced by our knowledge of them. Harold had only one color – we have a “spectrum”ful.

Look to the children, teach them about color and who knows what “you” will learn! Check out this website-

http://www.framingham.k12.ma.us/juniper/color_days_poems.htm

-and take a glimpse of a youthful look at color. Why not color your day and decide how it makes you feel. I think I will color a yellow and blue day for myself and only speak Swedish.....Could be a very quiet day!

Cynthia J. Sturke

June 25-July 2 CIE's 25th Session entitled "Light, Dark Skies and Space" San Diego, CA

www.cie-usnc.org

Aug 4-6 Midterm Mtg: AIC Color 2003 "Color Communication & Management"

Bangkok, Thailand Contact: aran@sc.chula.ac.th

Sept 18-19 CMG's Canadian Regional Meeting Toronto, Canada www.colormarketing.org

Nov 1-4 CMG's Fall International Conference San Francisco, Calif. www.colormarketing.org

2004

Jan 19-22 ASTM E12 Color and Appearance Meeting/Housing: Embassy Suites Hotel, Ft. Lauderdale, FL In Conj. With: D01/G03

April 18-21 TAGA/IS&T 2004 San Antonio, Hyatt Regency Riverwalk Hotel, San Antonio, TX
Contact: TAGA at 585-475-7470 <http://www.taga.org>

Position Announcement: Full-time Tenure Track Classroom Faculty Spring 2003 Science and Mathematics Department

FIT's Department of Science and Mathematics seeks qualified applicants to fill a tenure-track faculty position in the physical sciences. Background in color science preferred. Successful candidate must be prepared to teach course in color science and the physical science survey. Expected to coordinate a re-organization of the physical science curriculum. Must be highly motivated and have good technology skills. Demonstrated teaching effectiveness required. Minimum 60 appropriate graduate credits required, Ph.D. preferred.

To apply, please submit a letter of interest, curriculum vitae, and three current letters of reference to:

Personnel Administration
Fashion Institute of Technology
227 27 Street, New York, NY 10001.

The screening process will begin immediately and continue until the position is filled.

Color Science Offers Graduate Scholarships

The Masters of Science Degree Program in Color Science is currently seeking highly qualified applicants for Fall 2003. Scholarships and assistantships are available for those who qualify. Funding can consist of up to full tuition assistance and a 12-month stipend (total of about \$30,000/per year). Request your graduate application today! The deadline to be considered for funding is February 15, 2003.

The Rochester Institute of Technology Chester F. Carlson Center for Imaging Science offers students a unique opportunity to earn a MS Degree in Color Science with the Munsell Color Science Laboratory, a preeminent academic laboratory dedicated to color science and imaging in the United States.

For more information see us at:

<http://www.cis.rit.edu/mcs/>

or contact:

Colleen M. Desimone
RIT Munsell Color Science Laboratory
54 Lomb Memorial Dr., Rochester, NY 14623.

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

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

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