



# Inter-Society Color Council News

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2001

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### *From the Office of the President . . .*



I want to wish all of you a very happy, prosperous, and healthy New Year in 2001. We passed the true Millennium date with little fanfare or acknowledgment. Now, in the first days of the Third Millennium, I have high hopes for the future of the ISCC. Besides the great milestone that awaits us with the AIC meeting in June, there is an important event in the nearer future that bears directly on the educational goals of the ISCC. That is the course, "*Color Basics for Industry*," to be held in Cleveland on March 19-20. Chairs **Roland Connelly** and **Richard Harold**, both renown in the science of color, and experts on organizing and teaching short courses, have put together a great program that will benefit both specialists and nonspecialists.

"Color Basics for Industry" will be a practical introduction for industrial managers and technologists. Prior training in color science is not required for these two days of **interactive** instruction and learning. The novel syllabus corresponds with the desired industry focus of the attendee. The participants select the areas they would like most to learn. After the first day of general



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background, the second day will have sessions devoted to four technology areas (Textiles/Dyes; Paints/Plastics; Graphic Arts/Inks/Design, and Digital Color Communication), among which each participant can select two.

As will be clear to readers of this Newsletter, we all could benefit from Roland's and Richard's course, so I encourage you folks to enroll as soon as possible. However, I'd like to suggest that each of you who reads this Newsletter must know someone—probably a manager or maybe even a person reporting to you—who has no idea about color, but who relies on you to answer questions and solve problems as they arise. Why not get this person to the Cleveland color course; so thereafter you can spend your time more productively (and perhaps more enjoyably)?

**“Color Basics for Industry” will be a practical introduction for industrial managers and technologists.**

Finally, I'd like to open a line of communication that will allow you to make the ISCC more responsive to *your* needs. If you have any suggestions or ideas of what should be changed, please get in touch with me (phone 215-781-7544; fax 215-781-1789; email [jladson@estee.com](mailto:jladson@estee.com)) and I will do everything I can. For one thing, I will report to the Board of Directors and we will consider each opinion very carefully. If you wish, you can have total anonymity. I *promise* to keep the source confidential.

One aspect of the ISCC on which we have had very little feedback is the Newsletter. The Editor, **Tek Celikiz**, and Compositor, **Cynthia Sturke**, work very hard to produce a great Newsletter that fills your needs, so they want to be sure they are reaching you in the best way possible. Please let me know what you think of the current issue after you have read it.

See you in Cleveland—”The Best Location in the Nation”, home of Drew Carey, and the Rock and Roll Hall of Fame!

Your President,  
Jack A. Ladson

## COLOR BASICS FOR INDUSTRY AN ISCC EDUCATIONAL COURSE

**Discount Registration through 2/19/01**

The Inter-Society Color Council (ISCC) is sponsoring a two-day educational course designed for people who work with color or work in industries where color and appearance are important factors in their products. The course will be held at the Cleveland Airport Marriott in Cleveland, OH on Monday and Tuesday, March 19 and 20, 2001. Prior training in color science is not required for these two days of interactive instruction and learning.

**Day One** will be spent on the basics of color, including how we see color, how we measure color and how we communicate color. Some of the topics will be visual evaluation, instrumentation, CIE system, color communication, color differences and how these all interact.

**Day Two** will consist of four one-half day sessions and each one of which will be presented twice. Thus participants may attend two different sessions. Each session will be industry specific in order to cover unique applications, problems and allow for interaction among participants and instructors. The sessions will be directed towards the following industries: 1) Textiles/Dyes, 2) Paints/Plastics, 3) Graphic Arts/Inks/Design, and 4) Digital Color Communication.

Course instructors come from a wide range of color and appearance backgrounds and are all well respected and knowledgeable in their fields. The list of instructors includes:

Mr. Kenneth Butts, Datacolor International	Mr. Roland L. Connelly, SheLyn Incorporated
Mr. Richard W. Harold, BYK-Gardner, USA	Dr. Nancy Howard, Philadelphia University
Ms. Ann Laidlaw, SheLyn Incorporated	Mr. John Setchell, Jr., Eastman Kodak Company
Mr. Ralph Stanziola, Industrial Color Technology	

Tuition: \$385 (\$435 after February 19, 2001) for ISCC members and \$415 (\$465 after February 19, 2001) for non-members. Lunch for both days, breaks and course materials are included in the tuition. A registration form is inserted in this issue.

**Registrants are asked to bring a calculator.**

### Monday - Introduction to Color - Basics

<b>9:00 AM</b>	Introduction to Color Human observer-visual evaluations, anomalies, surround, other visual effect. How you see color.
<b>10:15</b>	Break
<b>10:30</b>	Putting numbers on color-CIE system Color differences-CIELAB, CMC, CIE2000
<b>12:00</b>	Lunch
<b>1:30 PM</b>	Tolerances Grouping Techniques
<b>3:15</b>	Break
<b>3:30</b>	How to get good data Instrumentation Types and Uses Care and Feeding
<b>5:00</b>	Adjourn

### Tuesday - Industry specific color and Measurement Sessions

Each session is repeated so that attendees can attend two different sessions.

<b>8:30 AM</b>	Session One A	Textiles/Dyes
	Session Two A	Paints/Plastics
	Session Three A	Graphic Arts/Inks/Design
	Session Four A	Digital Color Communication
<b>12:00</b>	Lunch	
<b>1:30PM</b>	Session One A	Textiles/Dyes
	Session Two A	Paints/Plastics
	Session Three A	Graphic Arts/Inks/Design
	Session Four A	Digital Color Communication
<b>5:00</b>	Adjourn	

## **Progress Report of ASTM SubCommittee on Multidimensional Characterization of Appearance (E12.14)**

This subcommittee was formed three years ago at the January 1998 meeting of committee E12 on Color and Appearance to define the multi-dimensions and to establish scales for their measurement. Research has been needed to relate perceived quality of appearance of materials to their measurable attributes. The committee named Dr. Paul Tannenbaum, Chairman and Dr. Mary McKnight, Secretary of the Subcommittee.

One of the first tasks was to assemble specimens exhibiting various appearance parameters such as gloss, orange peel, distinctness-of-image, haze and then to study the interaction of these parameters on groups of observers. Two quite different groups of individuals were asked to describe their perceptual evaluations. One group consisted of trained sensory evaluators. Another group consisted of potential car buyers who had not previously made sensory evaluations of automotive finishes. Objective measurements of specimens were made instrumentally and compared with the subjective evaluations of untrained observers.

The Subcommittee welcomes additional participation and membership. Contact Bode Hennegan, E12 Staff Manager, [bhennegan@astm.org](mailto:bhennegan@astm.org) 610-832-9740) or Paul Tannenbaum ([paul.m.tannenbaum@usa.dupont.com](mailto:paul.m.tannenbaum@usa.dupont.com))

This report should also note that individual panels can be prepared in the laboratory, but specimens exhibiting small differences are best obtained from factory production. The committee needs to obtain graded series of specimens that exhibit small differences of various types of appearance.

*Dr. Mary McKnight*

## **ISCC Member Attends An Emmy Presentation by The National Academy of Television Arts and Sciences.**

On October 3, 2000, at the Marriott Marquis Hotel in New York City, the National Academy of Television Arts and Sciences presented Sarnoff Corporation with an Emmy Award for Outstanding Technical Achievement. The team award was for "Pioneering development of equipment to provide objective measurement of perceptible picture quality in digital television systems."

The Emmy, Sarnoff's third in four years, honors JNDmetrix™ technology, which predicts how viewers will perceive the quality of digitally processed TV or still images, so program originators can adjust the processing to create the highest perceived quality. "JNDmetrix is widely regarded as the gold standard for quantifying the perceived quality of digital video and still images. It can play a huge role in upgrading the look of the images on television and the Internet" commented James E. Carnes, President and CEO of Sarnoff.

ISCC member Michael H. Brill attended the ceremony as a member of the JNDmetrix development team.

### **A Colorful News Flash!**

Q: One ship full of red paint collided with another ship full of purple paint. At last word, the crews were thought to be .....



.....marooned!

## William R. Hewlett 1913-2001

William Redington Hewlett, 87, an electrical engineer, who co-founded the nation's second largest computer company, Hewlett-Packard Co. died January 12<sup>th</sup> in his sleep. Mr. Hewlett started the company with his friend and partner, David Packard. Mr. Packard had died five years ago.

Mr. Hewlett was born in Ann Arbor, Michigan in 1913, moved to California when he was three where his father was a professor of medicine at Stanford University. It was at Stanford that the future partners met. Both graduated in 1934. Mr. Packard went to work for General Electric Co. in New York while Mr. Hewlett went to MIT to earn a master's degree.

A few years later both were back in Palo Alto where they decided to start their company with \$538 in a rented garage; the garage that now became a historic landmark.

The company grew quickly after WWII, and expanded from electronic and scientific instruments to calculators, computers and printers. Last year the company split into two corporations: the Hewlett-Packard Company with \$48.8 billion revenue and Agilent Technologies Inc., with \$10.8 billion revenue.

Mr. Hewlett became VP in 1947, executive VP in 1957, president in 1964 and chief executive in 1969. Mr. Hewlett resigned in 1977 and retired as chief executive in 1978. He served as chairman of executive committee until 1983. When he became chairman of the board in 1987, he was named director emeritus. In 1985, President Ronald Reagan awarded Mr. Hewlett the National Medal of Science, America's highest science honor.

Mr. Hewlett is survived by his wife, Rosemary; five children from his first marriage; and five stepchildren from his second marriage. His first wife, Flora, died in 1977.

(Hewlett-Packard is an ISCC sustaining member.)

## AIC Color 01 Deadlines

Mar. 1, 2001	Author's Notification of Presentation Details
April 15, 2001	Congress Program Available on Website
May 15, 2001	Advance Registration Due
May 15, 2001	Manuscripts for Proceedings Due
May 18, 2001	Hotel Reservations Due
June 24, 2001	AIC Color 01 Begins

## AIC Adds

### Pre-Conference Tour!

There has been a pre-conference tour added to the previously announced program. An additional Corning Museum of Glass and Finger Lakes Winery Tour will be offered on Saturday, June 23rd at 9:00 a.m. An updated registration form has been inserted in this issue to reflect this additional social event.

## AIC Color 01

From June 24-29, 2001 the 9th Congress of the International Colour Association will be held in Rochester, NY, The World's Image Centre. This Congress promises to be stimulating and innovative as state-of-the-art color science, technology, art and design are shared. We are preparing a dynamic program for the Congress, including symposia, invited talks, contributed and poster papers, and an entertaining excursion and delectable banquet. This is a great opportunity to share your knowledge on any color related topic.

## AIC Hotel Information

Housing for the 9th Congress is available at special negotiated rates at the following downtown hotels all located within walking distance of the Rochester Riverside Convention Center.

Hyatt Regency	\$119/night
Four Points by Sheraton	\$101/night
Crowne Plaza	\$119/night

Contact DePrez Travel Bureau (listed on the reverse side of the enclosed registration form) for reservations and any questions you may have about the hotels.

## Improving Colorimetry: A Correction

William A. Thornton, December 2000

Thirty-five years ago, a new lamplight arose. Traditional colorimetry assessed the color and brightness of the new lamplight, in relation to its actual color and brightness as visually assessed, only in great error. Yet that lamplight is now in use all over the world, due to its recognized superiority in color rendering (although familiar in source color) and in energy saving (brightness per electrical watt expended). Conversely, that colorimetry has since been recognized to fail badly in other ways as well, particularly in substituting for the normal human visual system in the enormous industry of matching of product colors. Color-matchers worldwide find themselves in increasing and anguished trouble, because what is seen, and what is colorimetrically determined, is so often in significant disagreement.

The difficulty lies with the three functions defining colorimetry. If the physical measurement of colorimetry is to substitute for human seeing, the functions used in it must accord with the three spectral sensitivities of the normal human visual system. These functions were recognized by Helmholtz of offered a surprisingly appropriate set of three "color-sensitivity curves" (his term). These curves are reminiscent of spectral transmissions of a blue, a green, and a red glass. They may be thought of as enabling the visual system to determine (measure) the blue, green and red content of each light ray entering the visual system.

Colorimetry is basically that simple, and its improvement lies in correctly humanizing the three functions.

Now let me offer some comment in rebuttal to the choice of thrust of CIE TC 1-56, as proposed by Brill in ISCC Newsletter 388. The function-set urgently needed by the world's colorists is not a mathematical construct. The three functions depend not at all upon the manipulation called "transformation of primaries." The Grassmann "assumptions"

(Grassmann's own word) may or may not correlate to some degree with the ancient human visual system that must be represented by the functions. They have been representative for a very long time. Their peak spectral sensitivities have apparently settled in for four million years, and fall somewhere near 450 nm, 530 nm and 610 nm. The three functions are remarkably consistent among normal human observers, and other primates as well, and are certainly now intrinsic. They are thus not subject to manipulation in usage: like spectral sensitivities of man-made light-detecting equipment, they define peak efficiency, here peak visual efficiency. They therefore demand to be used, as is, in the design of anything to be viewed by the human observer, and by any detector representing the vision of the human observer.

I should like to suggest, and re-emphasize, that time is likely to show that the mathematical concept of "transformation of primaries" is without applicability to human vision; that the concept, even, of "primary light" has meaning only for those three unique and unalterable spectral lights that mark the peak visual-system sensitivities; and that the characteristics of the normal human visual system must be by now immensely stable.



### Response

from Michael H. Brill

I welcome Bill Thornton's communication, and also any others concerning CIE TC1-56. However, it still seems to me that current usage of color-sensitivity curves implies the Grassmann assumption and hence transformability of primaries. If transformability failed, one could not derive colorimetric quantities by weighted spectrum integration—as is universal practice. This is why I regard transformability as the *experimentum crucis* of CIE TC1-56. I congratulate Bill as the first to perform the experiment, and congratulate in advance the volunteer we seek now.

**EUROCOAT 2001**  
**International Congress/Exhibition**  
**25, 26 and 27th Sept. 2001**  
**Lyon - Eurexpo, France**

**VENUE**

EUROCOAT, the most important international Forum for paint and related materials (varnishes, inks, glues, and adhesives) will take place in Lyon at the **EurexpoExhibitionCentre**.

The Union of Associations of Technicians of Mediterranean Culture, UATCM, created Eurocoat. It takes place every year, either in France, Italy or Spain. This year, it is organised by the French Association for Coatings, AFTPVA and IDEXPO. This is a preferred place for exchanges between university and industry for activities in research, development and production.

**OBJECTIVES AND STRUCTURE OF THE CONGRESS**

For more than 50 years, the Congress gathers the different sectors of the coatings industry for presenting the scientific and technical state of the art and emerging trends. Experts give an accurate description of a determined theme. this year in 2001 it will be, **Coatings and Adhesives in Transport and its Structures**. All the aspects related to materials, substrates and processes will be examined. This will be of interest for producers, painters, and chemists of industry both in the laboratories and of factories, physicists, mechanics, lawyers, economists and end-users. The *conferences* and the *posters*, received according to the Call for Papers and after evaluation by the Scientific Committee, will develop the theme of the general program.

**Transport** has considerably grown and varied its ways during the XXth century. The evident main reason is the innovation and diversification in motoring. A second reason is the development of efficient surface properties for the vehicles-durability-

and for the structures -energy supply, roads and bridges, road signs- where coatings and adhesives are playing an important role.

**CALL FOR PAPERS AND PRACTICAL INFORMATION**

Papers must be *original unpublished data*. You are invited to send title and a 10-line abstract, both in English and French. The lecturer accepts to send the full text in due time, to present it in agreement with the published schedule and pay a contribution of 1000 FF for organisation expenses, as a first author. He and the co-author will benefit from a special reduced fee for registration for the full Congress. **Registration is necessary to communicate.**

Official languages are French and English for texts and oral presentation (25 min.) with **simultaneous translation** in both languages. Full texts (15 pages max) are put together, published as received as Proceedings. The International Jury attributes Awards for the best conference texts. Copyright is the property of AFTPVA. Upon request the author is allowed copyright.

**DEADLINES**

Pre-registration for lecturer, with submission of title and abstract in English and in French: *January 25, 2001.*

Acceptance by the Scientific Committee (oral or poster) and recommendations for contributors: *February 15, 2001.* Full text: *April 30, 2001*

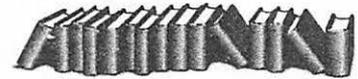
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## A Trio of Book Reviews



**Color in Architecture**, by Harold Linton, McGraw-Hill Co., New York, 1999, 268 pp, \$69.96

**The Color of Cities**, by Lois Swirnoff, McGraw-Hill Co., New York, 2000, 230 pp

**What Colour is the Red House?**, by Karin Fridell Anter, Royal Institute of Technology, S-100 44 Stockholm, 2000, 338 pp (for ordering copies: [karinw@arch.kth.se](mailto:karinw@arch.kth.se))

Aspects of color in the environment are explored in three recent publications and each in quite different ways. Common to all is an awareness of the complexity of perceiving and describing color with the many variables involved.

**Color in Architecture** surveys a variety of building types, interiors and urban spaces that employ color and outlines some of the current design methods used. Because the scope is so broad, emphasizing design methods may be misleading as a basis for design. A few exceptions are found in the works of Jean-Philippe Lenclos, Lourdes Legorreta and Sussman/Prejza, which are developed in more detail and offer some understanding of the complexities of the projects and the environmental context. Particularly interesting are projects in urban design and restoration. Designers and teachers may look to the book as a catalyst for thinking about color, particularly when involved with an unfamiliar building type, and will find sufficient references to look further.

While Harold Linton has made a commendable contribution to the literature of color for architecture, the full intent of this book is limited by the inclusion of some trivial designs and poor color photography. Small-scale photos are mere notations, lack the impact of larger images and often are at odds with the descriptions. Conveying the experience of color in architecture is never easy and the author is very aware of it.

“Color in the architectural context is not a simple perceptual entity. It is perceived within the parameters of space, time, movement, and environmental changes. The color image of the architectural space I generated by integrating sequential perceptions of individual scenes into a coherent whole. The color impressions evoked by the individual scenes are in themselves the result of the compound effects of various factors.” He includes in more detail spatial elements, materials, light, viewpoint and the movement of the observer.

More interesting than the specific projects in the author’s discussion of current technology, research and education. An architect today faces all the problems of his predecessors in visualizing and refining his ideas, conveying the concept to the client, the construction team and the public. The computer has become an essential tool in implementing designs while creating new problems affecting the quality of the finished work. The normal period of gestation for design development has been condensed to the extreme by accelerating time pressures from the client. Without a sense of tactile qualities or color development, too many current buildings are beginning to resemble bland computer modeling.

The teaching of color in U.S. architectural programs has been given scant attention in recent years due in part to changing fashions as well as the lack of teachers trained in both color and architecture. Harold Linton has been organizing programs that emphasize training colorists. At Lawrence Technological University, students of architecture and interior design receive some color study content in the foundation program and may elect more advanced color study. In practice, problems and conflicts can be expected when working with color specialists who have no training in architecture and design.

Lios Swirnoff in **The Color of Cities** explores the impact of color and the quality of light on one's perception of the urban environment. Geographic context, light intensity and atmospheric clarity all contribute as well as the richness and variety of forms. Italian cities and hill towns reveal their intellectual and cultural identities to the pedestrian and are appropriate subjects for analysis. The color of stones, clays and other regional materials help to establish the general character of the architecture. Conformity to terrain and the overlays of history add to each city's uniqueness.

To one who has lived in Italy and experienced the rich variety of cities and town, the author's descriptions help stir many layers of memory. But for the new reader, photography again is limited as in Linton's work. The scale of photography and the intense focus of a skillful photographer are needed to convey the sense of a place, the feeling of architecture and movement through complex spaces.

Distinguishing characteristics of many cities from Paris, London and Scandinavia to New York, Boston and Los Angeles are revealed through their historic architecture, quality of light and color of materials. The author's emphasis on the pedestrian experience invites closer scrutiny of the detail of city walls and streets where color may be limited by traditional or vernacular restraints. In contrast Venice is revealed through the reflected light of its canals and waterfront but invites discovery of interior passageways and richly decorated surfaces.

Apertures and textures relieve the sense of monochromatic composition of many Japanese sites. The view through a temple gate or residential entrance into a beautiful garden reveals a sensibility informed by nature. In New York City some measure of landscape is preserved in older residential areas but the canyons created by modern skyscrapers shut out light and area limited in color and texture. Anonymity both encourages and reflects the fast pace of the city's life.

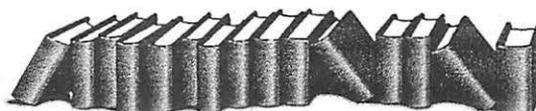
For **What Colour is the Red House?** Karin Fridell Anter chose "the perceived colour of painted facades" for her doctoral thesis from the Royal Institute of Technology. Some details of her study were presented at the ISCC 2<sup>nd</sup> Panchromatic Conference in Savannah, February 2000.

She asked several questions to determine the impact of light conditions, viewing distance and visual context on the perceived color of painted facades. Her observers included professionals experienced in the field of color who referred to the national Color System atlas for comparisons. A second group of "naïve viewers" were given specific verbal questions and magnitude estimation scales. Observations of the two groups were compared to the inherent color of the façade to determine whether identifiable patterns or tendencies existed. The ultimate goal is to clarify and increase understanding of exterior color design.

The author also recognizes that the perceived color is influenced by the intentions, references and knowledge of the observer. "Thus in a given situation with light, distance and other external factors being constant, there is not one perceived colour but a colour area within which the perceived colour can vary."

Without benefit of color illustrations, Karin Fridell Anter has produced a model for testing but one would need the NCS atlas to fully appreciate its merits.

*Anna Campbell Bliss*



## ISCC 2001 Ballot: Candidates for Director Positions (2001-2004)

Following are biographies of the candidates for the Board of Directors of the ISCC. According to the procedure begun last year, all members of the ISCC will have an opportunity to vote for up to three directors. If you are an Individual Member of the ISCC or a Delegate from one of our Member-Bodies, your ballot should be included in this newsletter. You have thirty days in which to return your vote to the ISCC Office, by mail, fax or email, whichever method is easiest for you. **February 28, 2001 is the deadline.**

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**Eileen Korenic** received her Ph.D. from the University of Rochester Institute of Optics in 1997 and worked for about two years at 3M Corporation in the Display Materials Technology Group. She is currently an Assistant Professor of Physics at the University of Wisconsin-River Falls. Her primary research interest is the colorimetry of liquid crystals, and she is extremely interested in activities that promote science literacy at all levels of education. She is an active member of the Optical Society of America, on its Membership and Educational Services Council, chair of the K12 education subcommittee, and on the editorial advisory board of *Optics and Photonics News*. She also is a member of the ISCC. As part of the ISCC Board, she would hope to promote more public awareness of the science of color.

**Richard (Dick) Fisch** is a Corporate Research Fellow at Imation, the Color Technologies and Data Storage spin off of 3M Company. He worked for 3M for 35 years. At 3M he specialized in Color Science Research. Dick organized and managed 3M's Color and Image Reproduction Center. He holds 35 US Patents on color related products and technologies. Prior to 3M, Dick worked for Technicolor. He was President, Executive VP, VP Technical Affairs, and Director of TAGA, [Technical Association of the Graphic Arts]. He concurrently served on the Annual Technical Conference Papers Committee [10 years], doing program assembly. Dick served on the IS&T [Society for Imaging Science and Technology] Board. He is a Fellow of IS&T, The Royal Photographic Society and The Institute of Printing. He is a long time member of the ISCC and a delegate to ISCC from TAGA. He served as one of the Liaisons, Proceedings Editor and a paper author for the Joint ISCC-TAGA 1992 Williamsburg Conference on the "Comparison of Color Images Presented in Different Media."

**James G. (Jim) King** is a Research Fellow at DuPont's Automotive Finishes R&D Laboratory in Troy, Michigan. His work involves the selection and qualification of color pigments for use in automotive topcoats, the preparation and presentation of color styling shows for automotive customers, and global consultation on the use of color pigments and the resolution of color-related problems. He is a member of the Detroit Colour Council and the Inter-Society Color Council, a Chairholder of the Color Marketing Group, and serves on the Board of Directors of both DCC and CMG. Jim also is a delegate to the ISCC from CMG.

After receiving his B.A. in Chemistry from the College of Wooster (OH) in 1964, Jim joined DuPont, where he has worked in a succession of R&D and Marketing assignments. In 1978 he moved to the Troy Laboratory to assume his current responsibilities for color styling and pigmentation technology. He holds several patents on pigment and dispersion technology. In addition to his technical activities he participates in DuPont's global color marketing of automotive finishes in Europe and Japan. He also supports color education activities at Eastern Michigan University and other local color organizations.

**John McCann** received his B.A. degree in Biology from Harvard University in 1964. He managed the Vision Research Laboratory at Polaroid from 1961 to 1996. His work concentrated on research in human color vision, large format instant photography and the reproduction of fine art. He is a Fellow of the IS&T, a past President of IS&T and the Artists Foundation, Boston. Along with Giordano Berreta, he co-chaired the IS&T/SPIE 2000 Electronic Imaging Meeting. John is also a delegate to the ISCC from IS&T. He is currently consulting and continuing his research on color vision.

**Margaret (Meg) Miele** is an Assistant Professor of Psychology and Assistant Chairperson of the Social Sciences Department at the Fashion Institute of Technology. Her specialty area is the Psychology of Color. In her capacity as a Color Psychologist, she has served as a consultant to the All Japan Fashion Teachers as well as to several private businesses. Although Meg has only been a member of the ISCC for over a year and a half, she has assumed the chairperson responsibilities for Interest Group III (Art, Design & Psychology), has presented a program in collaboration with the Education Committee, has been instrumental in the creation of a student chapter of the ISCC at F.I.T. and has taken on the activity of revising the ISCC Speakers Bureau. Meg has also been assisting with the preparations for the joint AIC/ISCC Conference to be held in June 2001.

**Sy Commanday** is a Color Scientist for Techmer PM, LLC. After receiving his BS in Chemistry from Brooklyn College (located in the City of his birth) he continued graduate studies at the U. of Arizona and Stevens Institute. After a few years as an analytical chemist at Ciba Pharmaceutical in Summit, NJ he received his calling to start his career in color in 1964 with another division of Ciba (called, at that time, Ciba Chemical and Dye Company). Since then he has worked at various positions, all in color, with Burlington Industries, Beckman Instruments, Phillips Fibers (now known as American Fibers and Yarns, soon to be Drake Extrusion), Ampacet and Hercules Fibers (now known as FiberVisions), taking early retirement, in 1994, after 15 years with Hercules. Retirement was not fulfilling enough, so after a year of color consulting Sy joined a company now known as Techmer PM, LLC, where he continues to work as a Color Scientist in Gainesville, Georgia.

During this 36-year career Sy has presented many papers covering various aspects of color technology. Many of these papers were concentrated on the problems and techniques of working with color in polypropylene fiber. Sy is a member of the ISCC (at one time, on the board of directors), AATCC, SPE and the Detroit Colour Council. It is at the various meetings of each of these organizations that Sy has presented his technical papers.

## **Research Fellows Positions Available**

**Research Fellow - EPSRC/DETR LINK**  
Future Integrated Transport - Research Project  
'Inclusive Transport Environments: Colour design, lighting and visual impairment'

Two Research Fellows are required for a broad, multidisciplinary two year project involving 2 University centres and a wide range of relevant industrial collaborators. The positions are based at either, South Bank University, Colour Design Research Centre in London or at The University of Reading, Centre for Inclusive Environments. The project will commence early in 2001. Experienced candidates are sought who have a PhD. The research fellows may come from any of the following disciplines: perception, vision, architecture, design and computing with an interest in the social issues of practical application of colour, design and lighting in the built environment.

The positions would require an interest in colour graphical communication, interior design, field research, IT, User needs, lighting. One of the posts would require some experience of statistical analysis. The project would be of interest to those who are keen to be involved with elderly and visually impaired needs, transport environment design of the future, a broad interdisciplinary project and are looking for a challenge.

Please call for an informal discussion, write or e-mail and send CV/personal details to:

Hilary Dalke, Colour Design Research Centre,  
South Bank University, 103 Borough Rd,  
London, SE10AA, UK  
Tel. 020 7815 8176 [dalkeh@sbu.ac.uk](mailto:dalkeh@sbu.ac.uk)  
Tel/Fax 017 1815 8176

[hilarydalke@bluecarrots.com](mailto:hilarydalke@bluecarrots.com)  
[www.colourdesign.com](http://www.colourdesign.com)

## **Color & Research Application In This Issue, February 2001**

Seldom is a color seen alone, such as an isolated color light in a sea of darkness. In most situations we perceive object colors in the context of a surround. This could be a field of view as complex as colored photograph, or it could be as simple as a standard and trial of a production color on gray surround. In either case the other colors in the surrounding field of view affect the color perception. While the simple case has been studied for years, it is a daunting task to investigate the almost infinite number of color combinations. Therefore some sort of structure is needed. In "A Theory of Colors in Combination – A Descriptive Model Related to the NCS Color Order System," Anders Hård and Lars Sivik provide that structure. The most relevant attributes or dimensions of color combinations are categorized into three main groups, each having three subgroups. The main groups are color interval, color chord, and color tuning.

Both artists and scientists search for relationships in the things around us to help us understand, enjoy and use what we have. When it comes to color, people such as Munsell sought to develop a geometric order which aided communication but also some think increased beauty by leading to color harmony. Colorists have long searched for "laws of color harmony." In 1944 Moon and Spencer proposed a mathematical model to define the relation between harmonious color combinations using color intervals and area factors. In "Influence of a Holistic Color Interval on Color Harmony" Ming-Chuen Chuang and Li-Chen Ou report on their research examining how the CIELAB color difference metric influences perceived color harmony. They were able to identify four color intervals as the color difference increased ranging from those colors confused with the target to those contrasting with the target. However their results clearly verify a significant influence of preferred colors on the perception of harmony.

Our next article also deals with color naming. When we talk about color naming we generally are talk-

ing about hue names, red, green, blue, etc. Unique hues are hues that cannot be further described by the use of the hue names other than their own. For example, orange is yellowish red or reddish yellow, but unique yellow can not be described as reddish yellow or greenish yellow. Rolf Kuehni describes a research project - "Determination of Unique Hues Using Munsell Color Chips" and his analysis of the results.

In our next article P. W. Trezona gives the "Derivation of the 1964 CIE 10° XYZ Colour-Matching Functions and their Applicability in Photometry." When the 1931 2° Standard Observer was developed, it included a constraint that there was a constant luminance (Y) plane, with both X and Z having zero luminance, which allowed photometry as well as colorimetry to be performed. Although the 1964 10° Supplementary Standard Observer was made as similar to the earlier one as possible, there is no full account of how the transformation was made. Furthermore there is no consensus of opinion as to whether photometry may be validly performed in this system. Therefore this article examines the role of photometry in the system and tries to ascertain how Judd probably derived the 10° XYZ standard observer.

For our final two articles we move to the area of electronic color. The digital camera has become a powerful tool for the capture of color images. However, if one wants to use these images for research or other activities using standard colorimetry, a characterization of the camera signals must be made in terms of the CIE system. Gouwei Hong, M. Ronnier Luo, and Peter A. Rhodes discuss the how to convert the device-dependent RGB signals from a digital camera to colorimetric terms. "A Study of Digital Camera Colorimetric Characterization Based on Polynomial Modeling" investigates the repeatability of the digitizing system, characterization performance when different polynomials are used, modeling accuracy, and the number of reference samples needed. Also the choice of characterization targets or media and their effect on metamerism are examined.

In the last issue, Ján Morovic and M. Ronnier Luo

introduced a set of algorithms for the calculation of both image and medium gamut boundaries in the article, "Calculating Medium and Image Boundaries for Gamut Mapping." They also reviewed the published gamut calculation approaches, the basic geometry used in gamut boundary calculations, and the methods suggested as solutions to the problems of calculating medium and image gamut boundaries for gamut mapping.

In this issue they have a follow-up article, "Evaluating Gamut Mapping Algorithms for Universal Applicability." Morovi and Luo followed an iterative procedure of examining individual regions within a test image separately then developing a new algorithm, resulting insights about some of the gamut mapping factors particularly relating to gamut differences between media.

In the reviews and reports sections we include two book reviews. One by Art Springsteen on *Colour and the Optical Properties of Materials* by Richard Tilley, and the other by Vivianne C. Smith discussing *Color Vision from Genes to Perception* by Gegenfurtner and Sharpe. José A. Caivano sends us a report on ArgenColor 2000.

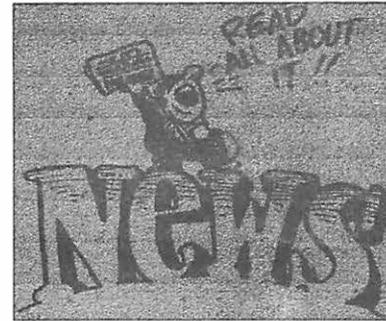
Our next article is the first part of a three part series dealing with "A Cross-cultural Colour-Naming Study." this study involved panels of Mandarin-speaking Taiwanese subjects and English-speaking British subjects. In Part 1, H. Lin, M. R. Luo, L. W. MacDonald, and A. W. S. Tarrant allowed the participants complete freedom in naming the color samples presented. The names used by the subjects were then analyzed. Results showed a close agreement between the two languages in terms of color categories, but a large discrepancy in the use of secondary names due to cultural differences.

In later issues of this journal the same authors will report on a constrained experiment and modeling resulting from this study.

Ellen C. Carter  
Editor, CR&A



## Did You Know?



In the 1890's in New York City a newspaper war was raging between William Randolph Hearst and Joseph Pulitzer. Color was a key weapon. The color was YELLOW.

"The most visible, popular, and, over time, profitable of Hearst's Sunday features were his color comics. Pulitzer had published a Sunday humor page in 1889 and a color humor supplement in 1894. One of the more important contributors to this section was the artist Richard Outcault who in early 1896 had begun to draw a series of cartoons organized around a recurring group of characters, the most recognizable of whom was a bald-headed, jug-eared, buck-toothed urchin in a yellow nightshirt." The Yellow Kid.

Hearst went to war for increased circulation by matching Pulitzer with a full-color Sunday Humor magazine. "...Hearst decided to match Pulitzer with a full-color Sunday humor magazine of his own. He custom-ordered specially designed color presses from the Hoe company and stole Outcault and his Yellow Kid from the 'World.'"

"Pulitzer tried to stay in the game by asking artist George Luks to draw his own cartoon using Outcault's characters, thereby giving New York two yellow Kids every Sunday and providing a convenient nickname, "yellow journalism," for Hearst's and Pulitzer's newspapers in particular and their style of journalism in general." Hearst won.

*The Chief*. The Life of William Randolph Hearst. David Nasaw, Houghton Mifflin Company, Boston. New York. 2000. p. 108.  
Magenta Ygelsias

## **Car Buyers Make Silver No. 1**

### **Perennial Favorite White Dethroned As Color King**

High-tech is in. Pure and clean are out – or at least taking a back seat. Silver emerged in 2000 as the most popular color for new cars, edging out the perennial leader, white, according to an annual survey by DuPont Automotive. “The [silver] look is really high-tech and yet has a certain harmony with nature. Silver seems to offer both,” said Terry Cressy, a spokesman for DuPont, the world’s largest supplier of car paints and coatings. “It has been gaining in the last two years but it really skyrocketed in 2000.”

DuPont has conducted the worldwide survey of car manufacturers for 50 years to spot trends and predict future preferences of car buyers. Car makers already are choosing colors for their 2003 and 2004 models, Cressy said.

DuPont Automotive, one of the largest business units of Wilmington-based DuPont Co., supplies more than 100 different product lines to carmakers, including paints, plastics and fibers. The division, whose sales exceed \$6 billion a year, could be vulnerable during the coming months with the auto industry suffering a downturn. In North America, 17.6 percent of the cars made in 2000 were silver, compared with 17.2 percent for white and 11.3 percent for black. Gold sneaked into the top 10 after years of being a popular choice only in luxury models.

Silver was also the leader in Europe, where blue traditionally has been more popular, and in Asia, where white is usually more common.

“The world is shrinking fast and it no longer takes a year for a color trend to travel from New York to Paris or vice versa,” said Bob Daily, color styling and marketing manager at DuPont Automotive.

So what does the world’s new fascination with silver cars say about people? Color experts say that’s a dicey question. There’s an entire field of research

that tries to associate color choices with personality: Someone who likes red is passionate and intense. Someone who likes yellow is cheerful and spirited.

But others believe color choices, especially for big items such as cars, are influenced more by trends and the environment than personality. “Maybe 90 percent of the population is color-conservative. You can predict what they’ll do,” said Margaret Walch, director of the Color Association of the United States, a fashion and textile trade group in New York. “There are only about 10 percent of wildcats who are unpredictable and variable. They are the ones driving the new trends.”

At the Winner Automotive Group’s series of dealerships in Newark and Dover, champagne and black were the most popular colors on the luxury lines, such as Porsche and Infiniti. But silver was the clear winner for almost every other make, said Marketing Director Charlie Tomlinson.

“A couple of years ago, green was going strong, and white has always been popular,” Tomlinson said. Paint and fashion experts said the trends in car colors often mirror movements in other areas, such as interior decorating and clothing.

“Silver is something we’re seeing in home furnishings, where chrome and brush-steel are the popular colors,” said Regina Whelan, color marketing director for New Jersey-based paint maker Benjamin Moore & Co. “Silver being strong [in cars] does not surprise me at all.”

For the next few years, DuPont predicts, car buyers will be going more and more for “notice me” colors such as yellow, punchier reds and light blue. Others believe future trends will be shaped by money and the moods of buyers.

“If the economy is really strong and there’s a lot of money flowing, you tend to see a lot of optimism in color,” Whelan said. “When things aren’t so good, colors are more subdued.”

*Seth Agulnick, Staff reporter*

Wilmington (DE) News Journal 1/05/01

## **Spectrahue Launches New Color Therapy at Whole Life Expo**

TORONTO, Oct. 17 /CNW/ - Spectrahue Light & Sound, a Toronto company specializing in color and light therapies for home and office environments, launched its Color Ray Illuminator series, LUMALIGHT 2000, at New Life Expo in New York on Saturday Oct 21. This hand-held, color therapy tool, a breakthrough in color therapeutics, creates color energy through reflective crystal-coated glass. Unlike other light therapies, it does not use dyes, paints or color gels. LUMALIGHT'S gentle and non-invasive applications provide unsurpassed mind-body-soul reintegration and harmonization, the catalyst for physical/emotional health. LUMALIGHT's natural color light is absorbed by the body for nutrition and revitalization, stimulating cellular communication through color energy frequencies. Spectrahue has identified hundreds of home/office/professional uses of LUMALIGHT, ranging from stress control to alleviating sexual dysfunction, hormonal disturbances and mild viruses such as the flu.

At New Life Expo, Spectrahue's **Julianne Bien**, an ISCC member, demonstrated LUMALIGHT as well as a unique self-healing course, COLOR DREAM THERAPY. This dream therapy technique, pioneered by renowned naturopath and scientist Peter Mandel, aims color light on specific areas of the body to release traumas and emotional scars at a cellular level.

Spectrahue's expertise is color science technology. It acts as a consultant on the potential beneficial effects use of certain artificial lights on people's emotional, physical and psychological well-being. LUMALIGHT can be utilized as a color light reflexology tool which can be used for treating winter blues, stress and for performing rejuvenating facelifts. For further information: Julianne Bien, (416) 340-6284 x 232 or (416) 781-0755  
CO: Spectrahue Light & Sound Inc. ST: Ontario.



**Color Association of the United States  
(CAUS)**

## **COLORFUL NAILS**

**“Nail Polish As We Know It Today Was A Result Of The Auto Industry”**

Summer is a great time to observe nail polish habits because women are less conservative about color of their toes than their fingers.

Commercial nail polish was used as far back as 1800 and the first version was a red scented oil that was applied after nails were buffed. The emery board was invented in 1910. Nail polish as we know it today was a result of the automobile industry. In the 1920s the development of automobile paint provided the basis for fingernail paint. In the mid to late 1920s etiquette books warned against painting nails in garish colors. In 1932, Revlon introduced a nail enamel, and by 1938 became a multi-million dollar organization with this product. The first patch and nail wrap system was marketed in the 1940s after women joined the workforce to support the war effort. When women went to work in factories, the work was hard on their nails.

In the year 2000 nails are shorter but color remains the number one accessory for hands and feet.

For this fall gold will definitely be a lead color ( a latte hue, purple and a ruby red will also be popular). Warm metallics in general, such as copper, bronze, metallic brown and virtually any warm color with iridescence will surface over the next few seasons leading into 2002.

With more color in clothing I think that nail polish will take a more subtle, classic turn. Iridescence, special effects and texture will all be very important. Simple shades will compliment the color surge in clothing.

*Ashley Johnson,  
CAUS Summer Intern,  
Vancouver, BC Canada*

# First European Conference on Color in Graphics, Image and Vision CGIV'2002

**April 22-26, 2002- Palais de Congres, Poitiers, France**

**First Call for Papers:** Prospective authors are invited to submit papers for presentation in any of the technical areas listed in the Technical Overview. 2-3 page technical summary (1000+ words) indicative of the final paper content will be considered by the Program Committee when submitted by September 15, 2001.

## Technical Program Overview

1. Colorimetry
  - a. Color difference formulae and color models
  - b. Color appearance models
  - c. Color reflectance measurement and modelling
2. Color Specification & Color Measurement
  - a. Spectral models for computer graphics
  - b. Effects of surface parameters on color rendering
  - c. Color image capture & calibration
  - d. Calculating color gamut boundaries for devices
  - e. Physics of color image formation
  - f. Color in Computer Graphics
3. Color Vision & Image Understanding
  - a. Illuminant detection and color constancy
  - b. Color and display, color and virtual reality
  - c. Color vision and color image analysis
  - d. Color image quality assessment
  - e. Image synthesis and color reproduction
  - f. Naturalness of colour image reproductions
4. Color Image Processing & Analysis
  - a. Analysis, enhancement, filtering
  - b. Segmentation, recognition, description and understanding
  - c. Coding, compression, quantization

- d. Color in databases : indexation and similarity
- e. Mathematical models and data structures for color image representation
- f. Color in Image Rendering
- g. Color in Graphics Post-Processing
- h. Multispectral images
5. Applications
  - a. Color reproduction and the User interface
  - b. Color in software applications
  - c. Color in industrial applications
  - d. Color in video, motion pictures and television
  - e. Color management systems (CMS)
  - f. Color scanning and printing technologies
  - g. Image Reproduction
  - h. Color image databases

## Schedule

**First call for papers:** 4 October 2000

**Second call for papers:** 15 March 2001

**Paper proposals due:** 15 September 2001

**Notification of Acceptance:** 15 December 2001  
Upon acceptance of extended abstract, authors will be given instructions for the preparation of the full paper, in electronic form, to be published in the conference proceedings and on CD-ROM.

**Final papers due:** 30 January 2002  
Conference Registration form will be available February 2002.

**Sponsored by:**

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***JOSA A***  
**Feature Announcement**

**Aging of the Human Visual System**

**Submission Deadline: February 1, 2001**

The editors of *JOSA A* are soliciting papers for a special issue on aging of the visual system and vision. The study of lifespan changes in human vision and physiological optics is a topic of continuing interest to members of the Optical Society of America. The population as a whole is aging; it therefore becomes crucial to study how vision changes and how to maximize useful vision for as long as possible.

A complete understanding of vision includes the mechanisms at work for people of all ages, and how these change. An accurate view is not limited to a snapshot of young adults. In the human visual system, both structure and function continue to change from birth onward. A broad scientific approach, encompassing a wide variety of perspectives and disciplines, is essential for understanding these changes and their impact on function and performance.

The functional impairment caused by aging is of primary interest. New, large-scale studies are examining how function changes with age in an ever-broadening range of real world situations, such as dim illumination. Some understanding of optical and neural contributions to the decline in vision function with age has been achieved. There are many potential ways to help offset the optical problems associated with the aging cornea and lens. As the understanding of the optical changes improves, the associated functional problems are now being addressed in novel ways. Scientists are investigating the properties of retina and support cells, looking for new means of preserving neural function or augmenting support. For any thorough understanding of aging, it is necessary to separate normal aging changes from the earliest sign of disease. Many of the primary diseases causing vision loss have increased incidence with increasing age. Understanding why this occurs is important in the study of vision. It is also crucial in combating disease. Opti-

cal means for the early detection of visual system or systemic disease, as distinguished from normal aging, must be designed based on the changes in the aging eye. Finally, if the eye is the window to the soul, it is also the window to blood supply and neural circuitry. Many systemic changes occur with age that impact on the quality of life, and these can be measured using novel optical techniques.

Suggested topics include: Optics: Aging, image quality and optical aberrations; Changes in optical properties of the lens with age and prebyopia; Myopia and hyperopia in older eyes; Changes in the optical properties of the cornea with age and tear film; Aging and intraocular scattering; Changes in the optical properties of the retina with age; Optical measurement in aged eyes of the structure or function of the photoreceptor/retinal pigment epithelial complex; Optical measurement in aged eyes of the structure or function of the neural retina; Changes in the microenvironment of the retina; Optical measurements of structure and function of the retina with aging or in order adults; New Instrumentation and techniques for retinal imaging in older adults

Papers should be identified as an Aging of the Human visual system feature issue paper and submitted to the Optical Society of America, Manuscript office, Journal of the Optical Society of America A (AHVA feature), 2010 Massachusetts Avenue, N.W., Washington, D.C. 20036

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*mes@spectacle.berkeley.edu*



## CALENDAR



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

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### 2001

- Jan. 23-26** ASTM Committee D-1, Paint and Related Coatings, Materials and Applications, Embassy Suites, Ft. Lauderdale, FL. Info: T. Brooke, 610-832-9729; fax: 610-83-9666; [tbrooke@astm.org](mailto:tbrooke@astm.org)
- Jan 23-26** ASTM Committee E-12, Color and Appearance, Embassy Suites, Ft. Lauderdale, FL. Info: Bode Hennegan, 610-832-9740; fax: 610-832-1547; [bhennegan@astm.org](mailto:bhennegan@astm.org)
- Feb 25-28** Continuous Improvement Network Annual Conference, Drake Hotel, Chicago, IL  
 tel: 412-741-6860
- March 19-20** Williamsburg Conference, ISCC Color Course, Color Basics for Industry, Cleveland, OH, Airport Marriott. Info: Roland Connelly, SheLyn, Inc., [roland@shelyn.com](mailto:roland@shelyn.com), Richard Harold, Color and Appearance Consulting, 703-709-5454 [rwharold@worldnet.att.net](mailto:rwharold@worldnet.att.net)
- April 1-3** Color Marketing Group Spring International Conference, Orlando, FL 703-329-8500  
[cmg@colormarketing.org](mailto:cmg@colormarketing.org)
- April 23-27** ASPRS Annual Conference, St. Louis, MO, 301-493-0290; Fax: 301-493-0208  
[www.asprs.org](http://www.asprs.org).
- May 6-9** TAGA Annual Technical Conference, San Diego, CA. Info: 716- 475-7470; fax: 716-475-2250, [TAGAOfc@aol.com](mailto:TAGAOfc@aol.com); website: <http://www.taga.org>
- May 10-12** CIE Experts Symposium on Light Emitting Diodes, Holiday Inn, Gaithersburg, MD  
 contact: Y. Ohno, NIST, [Ohno@nist.gov](mailto:Ohno@nist.gov)
- May 14-15** CORM 2001: 100 Years of Optical Radiation Standards for Commerce for the United States and in the Global Community - Shrinking Uncertainties for a Shrinking World to be held at NIST, Gaithersburg, MD. Contact: Danny Rich at Sun Chemical Inc (GPI), 201-933-4500 x1144 or [RichD@sunchem.com](mailto:RichD@sunchem.com)
- May 17-20** 2001 CIE Division 2 Annual Meetings, NIST, Gaithersburg, MD, contact: Y. Ohno, NIST, [Ohno@nist.gov](mailto:Ohno@nist.gov)
- June 24-29** ISCC/AIC Mtg, Rochester, NY; Paula J. Alessi, 716-477-7673; Fax: 716-722-1116  
[paula.alessi@kodak.com](mailto:paula.alessi@kodak.com)

**Sept 23-25** CAD/SPE RETEC 2001 "Hot Color - - - -Cool Plastics", Marriott Resort Hotel, Marco Island, Florida. Chairperson: Gary Beebe, A. Schulman, tel: 330-239-3059, [gary\\_beebe@aschulman.com](mailto:gary_beebe@aschulman.com)

**Nov. 5-9** IS&T/SID 8th Color Imaging Conf., Color Science, Systems & Applications, Scottsdale, AZ. Fax: 703-642-9094, [info@imaging.org](mailto:info@imaging.org)

## 2002

**Feb 23-25** ISCC Williamsburg Conference, Solutions for Industrial Color Problems, Chair: Ralph Stanziola, [rascolor@juno.com](mailto:rascolor@juno.com)

**April 20-23** ISCC/Detroit Colour Council Joint Meeting, Troy, MI Chair: Jim Keiser, [james.r.keiser@usa.dupont.com](mailto:james.r.keiser@usa.dupont.com)

**June 9-13** Fourth Oxford Conference on Spectrometry, Davidson College, Davidson, N.C. Info: Art Springsteen, [avian@kear.tds.net](mailto:avian@kear.tds.net) Teresa Goodman [tmg@npl.co.uk](mailto:tmg@npl.co.uk)

# INTER-SOCIETY COLOR COUNCIL

## "Demystifying Color" by Bob Chung

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

This technical report produced by Bob Chung of R.I.T. discusses and explains ten myths about color.

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

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

**Issue #389**  
**January/February 2001**

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**Please note: Next issue deadline for material submission is February 1st.**

**All submissions must be in English.**

## Advertising Policy

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

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

Artwork must be publisher ready and will be returned within 30 days after publication. The publishers reserve the right to determine the acceptability of the advertising.

A 20% discount is offered for a yearly contract.

Contact: Tek Celikiz, ISCC News Editor or Cynthia Sturke, ISCC Office Mgr.

