

Inter-Society Color Council *News*

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Number 338

July/August 1992

PROJECT COMMITTEE #49: IMPROVED COLORIMETRY

This new Committee got underway at Princeton Sunday June 21. Everyone with serious interest in colorimetry, and willing to contribute, is most welcome on the Committee.

Bill Thornton and Fred Billmeyer are co-chairs; it is our pleasure to invite all of you to join in pushing ahead this entity we are calling an "Improved Colorimetry".

There is present urgent need for better colorimetric procedure — for better agreement between color and brightness that is seen and color and brightness that is computed from the spectral power distribution (SPD) of the viewed light, whether from a light source, or reflected from an object.

This urgent need resides, for example, in lighting, in color graphics, in color television, in color photography and in color printing. It resides, as well, in coloration of materials, even if regarded as less urgent.

By the time you have studied all three parts of the pertinent paper (CR&A April-June-August), we believe that you will see that marked improvement is presently possible.

Bill Thornton, Chair
Dr. William A. Thornton
Prime-Color, Inc.
27 Harvard Road
Cranford, NJ 07016 USA
Tel/Fax 908-272-5759

Fred Billmeyer, Co-chair
Dr. Fred W. Billmeyer, Jr.
Color Consultant
1294 Garner Ave.
Schenectady, NY 12309 USA
Tel/Fax 518-377-9511

COLOR RESEARCH AND APPLICATION

IN THIS ISSUE, August 1992

With the increasing use of complex colored images on electronic displays, computer capacity problems necessitate the study of image segmentation and image representation. For color image analysis, the ability to classify spatial regions of an input image into a small number of uniform color regions is useful. Shoji Tominaga describes a color classification method that partitions a color image into a set of uniform color regions classified by means of cluster detection in a uniform color space. In "Color Classification of Natural Color Images" an algorithm for sequential detection of color clusters in the CIE $L^*a^*b^*$ color space is described, and the related algorithms for region processing and color computation.

The conclusion of the three part series "Towards a More Accurate and Extensible Colorimetry" by William A. Thornton is presented in this issue. In this final section

Dr. Thornton presents 1) alternative derivations of weighting functions that can lead to reduced errors in computed chromaticity, 2) an alternative brightness function that correlates to perceived brightness of white and colored lights better than does luminance, and 3) an alternative chromaticity diagram that is constructed as a constant-perceived brightness plane and avoids problems inherent in the conventional diagram. We look forward to exciting discussions of the implications of Dr. Thornton's extensive research project.

How do designers, creators, or buyers who want a specific color identify the color they desire for the suppliers? Several ways have been tried. In this issue, Ralph Stanziola explains "The Colorcurve System", a system designed specifically for the communication of color between the creators of color and the manufacturer of colored products. This simple notation system, which is a combination of a visual and numerical system, can be easily understood by both creative people and industrial technologists. In this article, Mr. Stanziola describes the general concepts and development of Colorcurve, the production of the Master Atlas, and the computer software.

In 1990, N. S. Smith, T. W. A. Whitfield, and T. J. Wiltshire described a computer program which had been developed to convert from one color notation to another [Vol. 15, 338-343, 1990]. Using that program the same authors present the mapping of the Optical Society of America-Uniform Color Scale (OSA-UCS) Atlas samples to the Natural Color System and the DIN System in this issue. In "NCS and DIN Notations for the OSA-UCS Atlas Samples", they not only show the results of the mappings, but also relate the difficulties inherent in conversion between systems when the colorimetric and measurement conditions vary between systems and the sources and magnitude of errors.

The Industrial Section of this issue features an article relating to coatings technology. In "Estimation of Film Thickness Non-Uniformity Effects on Coating Optical Properties", Gordon P. Bierwagen shows how film thickness imperfections have a considerable impact on the optical properties (thus the color) of a coating system. His calculations give a clear illustration to the coating scientist of the crucial influence of film thickness and its uniformity on the control of optical properties of pigmented films. By extending his methodology to the full visual spectrum, color difference predictions can be made as a function of fluctuation amplitude and film thickness.

Finally Dr. Robert W. G. Hunt writes a letter to the editor concerning "Standard Sources to Represent Daylight". He asks whether D sources will ever become available and if something should be done to provide some other daylight standard sources that can be realized now.

LETTERS TO THE EDITOR

Computing ΔH

I programmed the correction to equation #3 into my Lotus files and I am very pleased with the results. I have switched over all my personal ΔH^* calculations to equation #3. I have worked out a couple of refinements with the help of Ron Jones of ACS/Datacolor that takes care of two problem areas.

The first minor problem occurs when the delta h angle is exactly 180 degrees. A decision has to be made about the corresponding ΔH^* sign (whether positive or negative). ACS/Datacolor software returns a positive. The files I have created return a negative for a Δh of exactly 180.

The second more major problem occurs between quadrant I and quadrant IV. Equation #3 without modification returns the wrong sign for a standard and match located in quads I & IV respectfully. A simple correction to the equation alleviates this problem and keeps track of the sign no matter what the hue angle measurement of the two colors.

Here is how I have set up my files to calculate ΔH^* from CIEL a^*b^* values:

$$\Delta H^* = 2(C_{STD} * C_{TH})^{1/2} * \sin(\Delta h/2)$$

Unless: $ABS(h_{TH} - h_{STD}) \geq 180$

$$\text{Then: } \Delta H^* = -2(C_{STD} * C_{TRL})^{1/2} * \sin(\Delta h/2)$$

I have calculated the results using equation #3 out to the fourth decimal place and so far haven't found any difference between equations #1 and the modified #3 for Δh values great or small.

Lawrence D. Carstensen
(Copies of examples are available from
the Editor, upon request. Ed.)

NEW MEMBERS

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

Dr. Giordano Beretta
Canon Information Systems
4009 Miranda Avenue
Palo Alto CA 94304
USA

Ms. Ronda S. Bradford
PPG Industries
PO Box 9
4325 Rosanna Dr.
Allison Park PA 15101
USA

Mr. Lawrence D. Carstensen
The Murfin Division of Menasha Corp.
539 Industrial Mile Road
Columbus OH 43228
USA

Ms. Nami Fukuoka
Apt #612 A
5450 Wissahickon Ave
Philadelphia PA 19144
USA

Mr. Bernard G. Gosselin
Marland Associates, Inc.
Suite 300
24 S. River Road
Des Plaines IL 60016
USA

Mr. Eddie Jennings, Jr.
Intergraph Corp.
801 Ashwood Drive
Madison AL 35758
USA

Ms. Patty A. Monteleone
PPG Industries
4325 Rosanna Dr.
Allison Park PA 15101
USA

Ms. Jill H. Mudge
Optronics, Inc.
7 Stuart Road
Chelmsford MA 01824
USA

Ms. Louida D. Murray
DOD HFE TG
4476 W. Pond's View Dr.
Littleton CO 80123
USA

Ms. Karen A. Pappas
General Motors, BOC
915 Greenhills
Ann Arbor MI 48105
USA

Mr. James J. Paul
Miles, Inc. OPD Warehouse
Mobay Road
Pittsburgh PA 15205-9741
USA

Mr. Burt Saunders
8384 Short Tract Road
Nunda NY 14517
USA

Dr. JeanPierre Van de Capelle
Barco Graphics
Nieuwe Vaart 153
Gent B-9000 Belgium

Mr. James Vasconcellos
Benjamin Moore & Co.
134 Lister Ave.
Newark NJ 07105
USA

Note from the Membership Secretary

The ISCC membership directory information now includes room to store the year each member joined. If you know the year (or the approximate year) that you joined, please notify the membership secretary, and your record will be updated.

Please note the following correction to the 1992 Membership Directory:
On page 1, Dr. Joann M. Taylor's home telephone number is 503-645-5129.

NEWS FROM MEMBER BODIES

FEDERATION OF SOCIETIES FOR COATINGS TECHNOLOGY *Dr. Thomas Miranda, Editor Retires*

FSCT After 20 years as editor, Dr. Thomas J. Miranda of Consolidated Research, Inc., Mt. Prospect, IL, retired as Technical Editor of the Journal of Coatings Technology. Robert F. Brady, Jr., Head of the Coatings Section of the U.S. Naval Research Laboratory, Washington, D.D., will succeed Dr. Miranda both as Technical Editor of the JCT and as Chairman of the Federation's Publications Committee.

FSCT is pleased to announce that Dr. John L. Gordon, Vice President of Research and Development for AKZO Coatings, Inc., Detroit, MI, will present the Joseph J. Mattiello Memorial Lecture during its 70th Annual Meeting, which will be held at McCormick Place North, Chicago, IL, on October 21-23, 1992. This annual lecture commemorates the contributions of Dr. Mattiello, who was instrumental in expanding the application of the sciences in the decorative and protective coatings fields. The lecturer is chosen from among those who have made outstanding contributions to science and is selected to present a paper on a phase of chemistry, engineering, human relationships, or other sciences fundamental to paint, varnish, lacquer, or related protective or decorative coatings.

The theme for the 1992 Annual Meeting is "New Directions for a Changing World". The meeting will include many topical presentations sessions, two Room Award Paper session, a poster session, as well as the Mattiello Lecture described above. The meeting is coupled with the Paint Industries Show in October in Chicago. The show has expanded to almost 1000,000 sq. ft. to accommodate the increased participation by supplier companies. Currently, 265 companies have reserved exhibit space, making the 1992 Paint Show the largest ever sponsored by the Federation.

DETROIT COLOR COUNCIL *Detroit Color Council Meeting September 23, 1993*



Member body, Detroit Color Council (DCC) is planning a large meeting on September 23, 1993 in Troy,

Michigan. It will take place at the Michigan State Management Education Center.

The topic "New Pigments" was picked out of a survey of all the membership as the most desired topic for a large presentation. We are asking all those pigment or dye companies that have introduced in the past several years or feel that they have the products considered new for the automotive color business, to submit their interest in participation by August 15, 1992 to the following address:

EM Industries, Inc.

801 W. Big Beaver Road, Suite 455
Troy, MI 48084

Attn: Richard Hamilton

The mission Statement for this meeting will be:

"A forum for presentation of new 'color' technology as related to fiber and

textile, plastics and paint in the automotive industry.

The format will be presentation by industry experts based on new colors submitted by color producers. Dinner will be followed by a question and answer period with participation by the original presenters and representatives from the color producing industry."

The moderator for the program will be the president in 1993, Jim Hall, of General Motors Corporation. The presenters will be from the Automotive Paint Industry from the fiber and textile industry and from the plastics industry.

We ask that if you are interested that you be thinking of what pigments or dyes that you want to submit; the type of displays that would be suitable and a representative for your company who will sit in the front row to answer specific questions during the question and answer period.

For further information please feel free to call any of the following from the program committee:

James Hall, General Motors
313-947-5428

James Grady, Ciba-Geigy Corp.
313-855-2353

James Keiser, DuPont Corp.
313-583-8345

Richard Hamilton, EM Industries, Inc.
313-362-0555

AMERICAN SOCIETY FOR TESTING AND MATERIALS *D-1 Committee Elects Kenneth A. Trimber*

ASTM

Committee D-1 on Paint and

Related Coatings and Materials has elected Kenneth A. Trimber, vice president of KTA-Tator, Inc. in Pittsburgh, to head their committee for a two-year term. This committee, which was formed in 1902 and has about 580 members, is involved in the development of test methods, specifications, classifications, guides, and related knowledge for paint, printing ink, and other related coatings; preparation of surfaces to which coatings are applied; and paint applications tools. Committee D-1 is one of 132 such technical committees within ASTM.

ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA *IESNA Publishes "Lighting For Houses Of Worship"*

IES

The Illuminating Engineering Society of North America (IESNA), an ISCC Member-body, is pleased to announce the publication of "Lighting For Houses of Worship" (CP-21).

The primary tasks of lighting in houses of worship include aiding, supporting, and reinforcing the actions taking place within the structure. This includes the visual tasks of reading, viewing the space, or focusing attention on the leader or sacred object. This spectacular, new four-color publication addresses each of these tasks and their technical implications. Examples and recommendations are easy-to-follow and can be applied to all types of houses. Lighting designers, engineers, and architects, as well as religious leaders and building committees will find CP-21 of value. This 56-page publication will be available in August. The list price is \$50.00; it is available to IESNA members at a cost of \$37.00.

Contact: IESNA 212-705-7920

SOCIETY OF PLASTICS ENGINEERS COLOR AND APPEARANCE DIVISION *Color And Appearance Division RETEC - September 15 & 16, 1992*

SPE

The Color and Appearance Division of SPE, Philadelphia Section is sponsoring "Measuring Up To Today's Standards" on September 15 and 16, 1992. RETEC XXVI will be held at the Hyatt at Cherry Hill, NJ. This RETEC will focus on the measurement aspects of coloring plastics. The conference will be divided equally between training seminars conducted by color instrument suppliers and technical paper. All major color instrument suppliers will be present at the RETEC. A highlight of the conference will be a concluding panel discussion where data will be reported from samples which will have been measured in a round-robin on the available instruments.

Training topics include specifications/tolerances, calibration standards/confidence checks, QC-incoming colorants, special effect measurements, Surface Effects/Gloss, Yellowness Index/Whiteness Index, Metamerism, and Thermal Dichromism.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORIST *AATCC Hosts 1992 Conference*



AATCC will host its 1992 International Conference & Exhibition at the Inforum in Atlanta,

GA. October 4-7. The conference will feature a technical program, over 75 exhibits of machinery, equipment, dyes and chemicals for the wet processing industry and special events including a welcoming reception, awards luncheon, dinner party and spouse program.

The technical program for the conference will feature over 60 speakers in 17 concurrent sessions beginning at 9:00 a.m. on Monday, October 5 and ending Wednesday, October 7 at noon. Developed by AATCC's Executive Committee on Research, the program includes the Intersectional Paper Competition, the Student Paper Competition, the traditional Olney Medal Address and 14 sessions devoted to a variety of topics of interest to the textile wet processing industry. The 14 sessions are titled: International Trade, Finishing, Analytical Techniques, Dyeing (two sessions), Environmental, Color Science, Sizing and Preparation, Managing Quality, Carpets, Garment Wet Processing, Dyeing and Finishing, Microfibers and General. The registration packet for the conference includes titles and speakers for these sessions.

The conference will be held at the Inforum. The host hotel is the Hyatt Regency Atlanta, 265 Peachtree St. NE, Atlanta, GA. 30303. A registration packet including all forms for the conference and a request for hotel accommodations was mailed in early July. If you wish to receive a registration packet, please contact Shirley Clifton at the AATCC Technical Center; telephone 919-549-8141; fax 919-549-8933.

To take advantage of the reduced conference registration fees, the registration form and remittance must reach the AATCC Technical Center by

GRAPHIC ARTS TECHNICAL FOUNDATION *GATF Annual Members' Meeting Set For November 1-3, 1992*



The Graphic Arts Technical Foundation, an ISCC member body, recently announced their 1992 Annual Member's Meeting. It will be held November 1-3 at the Ponte Vedra Inn and Club, Ponte Vedra Beach, FL.

During this once-a-year event, members are encouraged to participate in discussions that will help continue to set the goals, pace, and strategy for Foundation programs, products, and services for the upcoming year.

The Ponte Vedra Inn and Club will provide the perfect setting to become reacquainted and form new friendships with those who have not had the opportunity to attend before.

For more information and a detailed brochure, contact Donna M. Mangold, program marketing manager at GATF, 4615 Forbes Ave., Pittsburgh, PA 15213; Telephone 412-621-6941; Fax 412-621-3049.

September 14. MasterCard and Visa are accepted for the registration fee and any additional function tickets ordered. After September 14, you must register on site and increased fees will apply. AATCC's room block at the hotel is valid only through September 14.

October is also the month that AATCC sponsors its annual workshop on Color Measurement Principles and the Textile Industry. The workshop is scheduled for October 29-30 and will be conducted at the AATCC Technical Center in Research Triangle Park, N. C. Guest speakers for the workshop are all recognized authorities.

Developed for operating personnel, the workshop covers basic color theory, visual and instrumental color measurement and the practical use of the CMC equation. Hands-on lab sessions will cover sample preparation, strength calculations, reflectance and transmittance measurements, shade sorting, shade formulation and color difference measurements.

A registration fee of \$365 (\$310 for individual and corporate AATCC members) includes lunch and refreshment breaks each day, a compilation of the papers presented and a copy of the AATCC monograph entitled *Color Technology in the Textile Industry*.

To register for the workshop or to obtain more information on it, contact Peggy J. Pickett at AATCC. Early registration is encouraged since this program fills quickly. As of press time, the 92-93 schedule for workshops and symposia was not completed. It is anticipated that it will be mailed in August.

In other news from AATCC, memberships recently reached a ten year high. As of May 1, 1992, the total number of individual members was 7030. This is the first year it has exceeded 7000 since 1981 when membership was 7349 and dropped to 6789 in 1982. Corporate membership is up to 239, its highest level since 1980 when 245 corporate members were on the rolls.

There are many benefits to becoming either an individual and/or corporate member of AATCC. There are also incentives for members recruiting new members. If you need any information about membership, please contact Membership Services, AATCC, P. O. Box 12215, Research Triangle Park, N. C. 27709-2215; telephone 919-549-8141.

OPTICAL SOCIETY OF AMERICA *OSA Publishes Articles*



The following articles of interest to ISCC members have been published in

Journal of the Optical Society recently.

"Mathematical reconstruction of color-matching functions" by Javier Romero, Luis Jimenez del Barco, and Enrique Hita

We calculate the fast Fourier transforms of the color-matching functions for the CIE 1931 standard observer with reference to the XYZ primaries. From an analysis of the Fourier-transform moduli thus obtained, we were then able to study the sampling theorem to get mathematical formulas that lead to the reconstruction of the color-matching functions at limiting frequencies of 0.02 and 0.05 cycle/nm. This reconstruction proves to be highly reliable at a sampling interval of 10 nm

and perfectly acceptable at 25 nm and even wider intervals. [JOSA A9:25-29, 1992]

"Color changes in red and white projections at low luminance" by Joy Skon and Lawrence Arend

In previous studies photographic projections containing only mixtures of red and white light produced a wide variety of hues. In the present experiment similar pattern were produced on a color monitor. Squares with four combinations of red and white light were studied at two mean luminances. Subjects reported that a chromaticity that appeared pink at our higher luminance appeared yellow at low luminance. [JOSA A9:30-33, 1992]

"Color appearance across the retina: effects of a white surround" by Israel Abramov, James Gordon, and Hoover Chan

Hue and saturation scaling was used to measure the appearance of spectral lights as a function of stimulus size at loci spaced across the horizontal

meridian. At a given locus, each hue (red, yellow, green, and blue) grew as a function of stimulus size to some asymptotic value. Growth functions fitted to the hue data were used to derive the sizes of perceptive fields of the hue mechanisms. We had previously investigated the size scales of these fields by using stimuli presented on a dark background. Field sizes for all mechanisms increased with eccentricity, this increase was greater on the temporal than on the nasal retina, and the retinal size scales of the different hue mechanisms were not the same. We now report the results of repeating the study with stimuli embedded in a white surround rather than in darkness. The main effects of the white surround were as follows: Sizes of perceptive fields of all mechanisms were smaller everywhere than with the dark surround. For small fields, stimuli appeared everywhere more saturated with the white surround, but larger stimuli appeared less saturated. [JOSA A9:195-202, 1992]

OTHER NEWS

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST On May 14, 1992, NIST held a workshop for lighting experts, manufacturers, and others interested in the development of technical requirements for a program to evaluate and accredit laboratories that test lighting products and systems. The new energy efficiency of electric lighting products accreditation program was established under the NIST National Voluntary Laboratory Accreditation Program (NVLAP) at the request of the National Electrical Manufacturers Association. Laboratories will be accredited to test such products as indoor and outdoor luminaries,

lamps, ballasts, and systems using test methods and performance criteria developed by standards organizations.

NIST, in cooperation with IEEE, Lasers and Electro-Optics Society and the OSA, will sponsor the 7th Biennial Symposium on Optical Fiber Measurements on Sept. 15-17, 1992, in Boulder, Colorado. Symposium sessions will cover measurements for things such as telecommunications fibers, fiber lasers and amplifiers, fibers for sensors, couplers, connectors, multiplexers, integrated optics, sources, detectors, modulators, switches, long-haul systems, LANs, subscriber loops, field and laboratory instrumentation, and standards. For more information of the symposium, contact the general chairman,

Douglas L. Franzen
NIST, Div. 814.02
Boulder, Colorado 80303-3328
303-497-3346.

COLOUR GROUP (GREAT BRITAIN)

CG Dr. M. R. Pointer presented the 1992 Sixteenth Charles Marques Memorial Lecture at the Royal Institution of Great Britain on March 24, 1992. His talk was entitled "Images of your Future".

It is with sadness we note that Dr. Maurice Tordoff, Chief Executive and General Secretary of the Society of Dyers and Colourists, died on Friday January 10, 1992. He had just completed 25 years of continuous service with the Society, and his knowledge, expertise and wise counsel will be sorely missed.

OBITUARY: ALEXANDER FREDRICH STYNE

Alexander Styne, a long time worker in the field of color and light, died of a heart attack on April 26 at his home in Coral Gables, Florida.

Mr. Styne was an Adjunct Professor at the College of Engineering, University of Miami. Along with his associate professor, Dr. Augustin Recio, P.E., they consulted in the design and construction of customized lighting installations.

He lectured and taught widely in the United States and Canada on many facets of light and color. He frequently traveled abroad, nearly every year, attending many international scientific meetings on light and color.

As a delegate of the Industrial Designers Society of America, he established the committee on Human Responses to Color, which he chaired since 1973. Mr. Styne's work was focused on the effect of light on humans. He was a fellow of the Illuminating Engineering Society of North America (IESNA) and a very active member of the Inter-Society Color Council (ISCC), where for ten years he chaired Project Committee 33 on Human Response to Color. More than 60 of his papers, articles and book reviews have been published.

He was born in Karlsruhe, Germany, November 15, 1913. His premedical studies at the University of Munich were interrupted when Adolph Hitler came to power and was forced to move to the Near-East where he worked as a carpenter at construction sites. In 1938 he obtained the equivalent of a master's degree for the Institut des Arts et de l'Architecture, Brussels, Belgium.

After coming to New York in 1940, Mr. Styne was employed by one of the founders of the Industrial Designers Institute, now the Industrial Designers Society of America (IDSA). In 1944 he opened an office in New York for interior and industrial design that included design of commercial office and residential living space. At that time fluorescent lighting was becoming generally accepted, but it was causing consternation among designers and customers because the radiant spectral power distribution was deficient in the red portion of the spectrum, compared to incandescent lamps. Styne realized that much more knowledge of lighting and light

sources was required and so he began to study modern lighting with the IESNA, as well as engineering subjects at Columbia University, The City University of New York and the General Electric Lighting Institute in Cleveland, Ohio.

In 1959 Styne moved to Miami, Florida where he became the chief designer for Haygood Lasseter, a Fellow of the American Society of Industrial Designers. In 1963, a lecture series at Clemson University, together with the preparation of students of Architecture, University of Miami, for a lighting competition of IESNA, led to the development of a Lighting Design Course that Styne taught at Miami until 1984.

Perkins Marine Lamp and Hardware Corp. (now Perko, Inc.) asked Mr. Styne in 1969 to investigate the requirements of new international regulations regarding signal lights. Styne was able to identify problem areas, assemble a team of colleagues at the University of Miami, and write a proposal to begin work within a few weeks. The 1969 assignment required redesign of all navigation lights to conform to the new standards of intensity and color.

In 1973, at the request of the International Standards Organization (ISO), IESNA asked the color committee to review the proposed revision of standards for ISO Safety Colors. Mr. Styne initiated a thorough study of these colors under the variety of light sources used in industry. The results were incorporated into the international specifications.

In 1979 Professor John Flynn, Kent State University, invited Mr. Styne to discuss his report on studies of human response to lighting modes at the 20th session of the CIE in London.

Mr. Styne is survived by two children from a previous marriage, a daughter Joanna Chestnut of Tacoma, Washington, and a son, Dr. Philip Styne of Orlando, Florida, and his second wife of 24 years, Mercedes Best Styne, of Coral Gables. He is also survived by a sister, Charlotte Rosenberg of Chevy Chase, Maryland, and two grandchildren, Gregory and Marissa.

Harry K. Hammond III

C A L E N D A R

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

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

1992

IESNA ANNUAL CONFERENCE, Aug. 2-6

Illuminating Engineering Society of North America, 86th Annual Conference, San Diego, California. Information: Valerie Landers, 212-705-7269.

XVII ISPRS CONGRESS, Aug. 4-13

17th International Society of Photogrammetry and Remote Sensing Congress in conjunction with 27th International Geographic Congress and 1992 Global Change Conference, Washington Convention Center, Washington, District of Columbia. Information: Judy Peesel 301-493-0290.

VISUAL SEARCH, Aug. 24-27

3rd International Conference on Visual Search, University of Nottingham, Nottingham, England.

EUROPEAN CONFERENCE ON VISUAL PERCEPTION, Aug. 30- Sep. 3

Information: Dave Burr, Istituto di Neurofisiologia, Via @. Zeno 51, Piza 56100, Italy.

WWDU '92, Sep. 1-4

Third International Scientific Conference - Work With Display Units, International Conference Center, Berlin, Germany. Information: Dr. Ahmet Cakir, ERGONOMIC Institute Ltd., Soldauer Platz 3, D-1000 Berlin 19, German Federal Republic.

SPE RETEC, Sep. 15-16

Society of Plastics Engineers, Color and Appearance Division/ Philadelphia Section "Measuring Up To Today's Standards", Hyatt at Cherry Hill, New Jersey. Information: Gary E. Beebe, 215-785-8285.

CMG - CONFERENCE, Sep. 20-22

Color Marketing Group International Color Directions Conference, Clarion Plaza, Orlando, Florida.

OSA - ANNUAL MEETING, Sep. 20-25

Optical Society of America Annual Meeting, Albuquerque, New Mexico. Information: Optical Society, 202-223-8130.

ISEP, Sep. 21-22

International Symposium on Electronic Photography, Sponsored by the Society for Imaging Science and Technology and German Society of Photography, Cologne, Germany. Information: 703-642-9090.

IMAGING THE FUTURE, Sep. 21-25

The Royal Photographic Society Science Committee Symposium on Imaging the Future, University of Cambridge, England Information: Dr. M. R. Pointer, Kodak Ltd., Research Div. W- 93, Harrow, Middlesex, HA1 4TY, England, tel. 44-81-427-4380 or FAX 44-81-863-4798.

AATCC - CONFERENCE AND EXHIBITION, Oct. 4-7

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

USNC/CIE ANNUAL MEETING, Oct. 11-13

The United States National Committee of the CIE Annual Meeting, Embassy Suites Resort, Scottsdale, Arizona. Information: Dr. Ian Lewis 602-991-9260, FAX 602-991- 0375.

FSCT, Oct. 21-23

Federation of Societies for Coatings Technology, 70th Annual Meeting and 57th Paint Industries Show, McCormick Place, Chicago, Illinois. Information: 215-545-1507.

IS&T 8th INTERNATIONAL CONGRESS, Oct. 25-30

8th International Congress on Advances in Non-Impact Printing Technologies with Exhibit, Williamsburg Hilton, Williamsburg, Virginia. Information: 703-642-9090. GIS/LIS Conference, Nov. 6-12 Geographic Information Systems and Land Information Systems Conference sponsored by the American Society of Photogrammetry and Remote Sensing and several other organizations, San Jose Convention Center, San Jose, California. Information: Denise Cranwell, 301-493-0200.

IS&T E/W SYMPOSIUM III, Nov. 8-13

The Society for Imaging Science & Technology, Maui Westin Hotel, Maui, Hawaii. Information: 703-642-9090.

ASTM COMMITTEE D-20 ON PLASTICS, Nov. 15-19

Miami, Florida. Information: Katharine Schaff, 215-299- 5529.

OPTICON, Nov. 15-20

Optical Society of America OPTICON '92, Boston, Massachusetts. Information: Optical Society, 202-223-8130.

AATCC FALL MEETING, Nov. 17-19

American Association of Textile Chemists and Colorists, The Doral Inn, New York City, New York. Information: Jerry Tew, 919-549-8141.

INTER-SOCIETY COLOR COUNCIL APPLICATION FOR INDIVIDUAL MEMBERSHIP

Name _____ Date _____

☐ Dr. ☐ Mr. ☐ Ms.

Company/Affiliation _____

Street _____

City, State, Zip _____

Telephone (____) _____

☐ Home

Fax (____) _____

☐ Business

Signature _____

My chief interests in color are:

☐ education

☐ art

☐ industry

☐ science

My work relates to the following products and services:

Name other interests _____

My present and past business, professional or educational connections with color are: _____

My particular interests in color are: _____

I belong to the following national organizations or associations: _____

I learned about ISCC from: ☐ ISCC Newsletter ☐ Other source: _____

Please tell us the individual or organization that interested you in ISCC

ISCC dues are shown on the reverse side. Applications for membership dated prior to July 1 should be accompanied by full annual dues; those dated July 1 and later should be accompanied by 50% of annual dues. You have the option of subscribing to Color Research & Application at special membership rates. If you wish to do so, please add \$70.00 (US) or \$100.00 (overseas) to the amount of your check.

This application and remittance should be sent to

Ms. Ann C. Laidlaw, Membership Committee, c/o SheLyn, Inc., 1108 Grecale Street, Greensboro, NC 27408

Telephone: (919) 274-1963

EXCERPT FROM THE BY-LAWS OF THE INTER-SOCIETY COLOR COUNCIL, INC.

Constitution, Article II — Aims and Purposes

The Council shall operate solely and exclusively as a non-profit organization with the aims and purposes:

- A. To stimulate and coordinate the work being done by the various members leading to the description and specification of color by these members.
- B. To promote the practical application of this work to the color problems arising in science, art, and industry, for the benefit of the public at large.
- C. To promote communications between technically oriented specialists in color and creative workers in art, design, and education, so as to facilitate more effective use of color by the public through dissemination of information about color in both scientific and artistic applications.
- D. To promote educational activities and the interchange of ideas on the subject of color and appearance among its members and the public generally.
- E. To cooperate with other organizations, both public and private, to accomplish these objectives for the direct and indirect enjoyment and benefit of the public at large.

Council Activities

The ISCC is the principal professional society on the field of color in the United States, encompassing the arts, sciences and industry, pursuant to the Aims and Purposes described above. Other national organizations with an interest in color are Member-Bodies of the Council and appoint delegations to participate in the Council's work. Individual members are the largest single group. The Annual Meeting, usually held in April, includes meetings of the Project Committees and sessions of four Interest Group: Measurement & Colorimetry; Vision & Color Appearance: Art, Design & Psychology; and Color Education. There is also a main program devoted to a specific aspect of color plus a Poster Paper session. Joint programs with one of the Council's Member-Bodies are interesting and educational.

In most years there is a separate topical Williamsburg Conference, often in February, where a single color subject is explored in depth with participants from all over the world providing state-of-the art information. Attendance at these conferences is usually smaller than at Annual Meetings, reflecting their topical nature and permitting interaction between speakers and participants.

The ISCC is the U.S. Member of the Association Internationale de la Couleur (AIC), which holds general meetings quadrennially and topical meetings annually. Color Research & Application, published bimonthly in English, is the principal international journal in this field; it is endorsed by ISCC. It reports recent research and opinions of colorists, review books and reports on national and international color meetings. Membership in ISCC permits subscription at more than a 50% discount. The ISCC News, a bimonthly newsletter, reports the color activities of the Council, its members, Member-Bodies and international color organizations. Members receive the ISCC News at no cost. Member-Bodies and Sustaining Members receive 10 copies of the ISCC News.

Categories of Membership

	Annual Dues
<i>Individual Member.</i> Any person interested in color and desirous of participating in the activities of the Council.	\$30.00
<i>Student Member.</i> Full time students.	\$10.00
<i>Member-Body.</i> Any non-profit national organization interested in color and desirous of participating in the activities of the Council.	\$100.00
<i>Sustaining Member.</i> Any organization not eligible as a Member-Body, or any individual, interested in color and wishing to support the work of the Council. Receives 10 copies of ISCC News.	\$250.00
<i>Retired.</i> Treasurer must be notified, in writing, of retirement before dues have been billed.	\$10.00
<i>Library Subscriptions.</i> Receives all ISCC mailings, including ISCC News.	\$40.00
<i>Overseas Member.</i> A surcharge of \$20 is added to \$30 dues to cover additional mailing costs.	\$50.00

LONG RANGE CALENDAR

1993

ASTM COMMITTEE D-1 ON PAINT, Jan. 17-20

Crown Sterling Suites, Ft. Lauderdale South, Florida. Information: Scott Orthey, 215-299-5507.

ASTM COMMITTEE E-12 ON APPEARANCE, Jan. 17-20

Crown Sterling Suites, Ft. Lauderdale South, Florida. Information: , Bode Buckley, 215-299-5599.

IS&T/SPIE SYMPOSIUM, Jan. 31- Feb. 5

The Society for Imaging Science and Technology Symposium on Electronic Imaging: Science and Technology, San Jose Convention Center, San Jose, California. Information: 703-642-9094.

ASTM COMMITTEE D-20 ON PLASTICS, Mar. 1-4

Atlanta, Georgia. Information: Katharine Schaff, 215-299-5529.

CMG - CONFERENCE, Apr. 4-6

Color Marketing Group International Color Directions Conference, Hyatt Crystal City, Washington, District of Columbia.

LUX EUROPA 1993, Apr. 4-7

Chartered Institution of Building Services Engineers, Edinburgh, Scotland. Information: CIBSE, Delta House, 222 Balham High Rd., London SW12 9BS.

ISCC ANNUAL MEETING, Apr. 18-20

Color, Environment and Regulations, Newport Islander Doubletree Hotel, Newport, Rhode Island. Information: Romesh Kumar 401-823-2161.

TAGA ANNUAL CONFERENCE, May 2-5

Technical Association of the Graphic Arts Annual Technical Conference, Minneapolis - St. Paul, Minnesota. Information: Karen Lawrence, 716-272-0557.

CORM '93, May 18-21

National Institute for Standards and Technology, Gaithersburg, Maryland. Information: Dr. Jack Hsia 301-975-2342.

AIC-7TH CONGRESS, Jun. 14-18

International Colour Association - 7th Congress, Technical University of Budapest, Budapest, Hungary. Information: Prof. Antal Nemcsics, Technical University of Budapest, Conference Office, Building Z, Room 101/b, H-1521 Budapest, Muegyetem rkp.3-9, Hungary, Phone and FAX 361-185-2218.

ASTM COMMITTEE E-12 ON APPEARANCE, Jun. 23-25

Atlanta, Georgia Information: Bode Buckley, 215-299-5599.

ASTM COMMITTEE D-1 ON PAINT, Jun. 27-30

Windham Franklin Hotel, Philadelphia, Pennsylvania. Information: Scott Orthey, 215-299-5507.

IESNA ANNUAL CONFERENCE, Aug. 8-12

Illuminating Engineering Society of North America, 87th Annual Conference, Houston, Texas. Information: Valerie Landers, 212-705-7269.

CMG - CONFERENCE, Sep. 12-14

Color Marketing Group International Color Directions Conference, Hotel del Coronado, San Diego, California.

AATCC - CONFERENCE AND EXHIBITION, Oct. 3-6

American Association of Textile Chemists and Colorists, Montreal, Quebec, Canada. Information: AATCC, 919-549-8141.

IS&T 9th INTERNATIONAL CONGRESS, Oct. 4-8

The Society for Imaging Science & Technology, 9th International Congress on Advances in Non-Impact Printing Technologies with Exhibit, Pacific Convention Plaza, Yokohama, Japan. Information: 703-642-9090.

ASTM COMMITTEE D-20 ON PLASTICS, Nov. 15-18

Fort Worth, Texas. Information: Katharine Schaff, 215-299-5529.

1994

ASTM COMMITTEE D-1 ON PAINT, Jan. 23-26

Crown Sterling Suites, Fort Lauderdale South, Florida Information: Scott Orthey, 215-299-5507.

ASTM COMMITTEE E-12 ON APPEARANCE, Jan. 23-26

Crown Sterling Suites, Fort Lauderdale South, Florida Information: Bode Buckley, 215-299-5599.

ISCC - ANNUAL MEETING, Apr. 24-26, 1994

TAGA ANNUAL CONFERENCE, May 1-4
Technical Association of the Graphic Arts Annual Technical Conference, Baltimore, Maryland. Information: Karen Lawrence, 716-272-0557.

ASTM COMMITTEE D-1 ON PAINT, Jun. 25-29

Crab Tree Valley Hotel, Raleigh, North Carolina. Information: Scott Orthey, 215-299-5507.

ASTM COMMITTEE E-12 ON APPEARANCE, Jun. 19-23

Montreal, Canada
Information: Bode Buckley, 215-299-5599.

IESNA ANNUAL CONFERENCE, Aug. 7-11

Illuminating Engineering Society of North America, 88th Annual Conference, Miami, Florida. Information: Valerie Landers, 212-705-7269.

AATCC - CONFERENCE AND EXHIBITION, Oct. 11-14

American Association of Textile Chemists and Colorists, Convention Center, Charlotte, North Carolina. Information: AATCC, 919-549-8141.

NEWSLETTER EDITOR Michael A. Hammel

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

Editor, ISCC News • 98 Grand View Drive • Fairport, NY 14450 • Tel. (716) 223-1823

If at all possible, please send all other materials ON DISKETTE as follows:

MSDOS—ASCII, Q&A, Word Star, Word Perfect (5.25"—1.2 Meg, or 360K)
(3.5"—1.44 Meg, or 730K).

Macintosh—Word, Macwrite, MS Works
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For hard copy transmission, FAX to (716) 425-2411.

Or send to: Dr. Ellen Carter • 2509 N. Utah St. • Arlington, VA 22207

Please note: the deadline for submission of material
is the 1st of even numbered months.



meeting reports



photos



contributions from
members

OFFICERS 1990-1992

Position	Name	Address	Telephone	FAX
President	Miss Paula Alessi	Eastman Kodak Company, Rochester, NY 14650	(716) 477-7673	(716) 477-0127
President-Elect	Mr. Ronald L. Connely, Sr.	Shelyn, Inc., 1108 Grecale Street, Greensboro, NC 27408	(919) 274-7466	(919) 274-1971
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Treasurer	Mr. Philip Hunter	Hunterlab, 11491 Sunset Hills Rd., Reston, VA 22090	(703) 471-6870	(703) 471-4237
Past-President	Mr. Hugh S. Fairman	Armorguard Products, Inc., PO Box 215, Andover, NJ 07821	(201) 786-6502	(201) 786-6399

LIST OF DIRECTORS

1990-1993

Ms. Ann Laidlaw	Shelyn, Inc., 1108 Grecale St., Greensboro, NC 27408	(919) 274-1963	(919) 274-1971
Dr. Nancy Jo Howard	Phil. Coll. of Textiles & Sci., Henry Av. & Schoolhouse Lane, Phila., PA 19144	(215) 951-2888	
Dr. Romesh Kumar	American Hoechst Corporation, 129 Quindnick St., Coventry, RI 02816	(401) 823-2161	(401) 823-2700

1991-1994

Dr. Joanne M. Taylor	Tektronix, Inc., 17890 NW Deercreek Court, Portland, OR 97229-3060	(503) 627-4911	(503) 627-5502
Dr. Ellen Carter	2509 N. Utah St., Arlington, VA 22207	(703) 527-6003	
Mrs. Magenta Yglesias	Ji, Inc., 1827 23rd St. NW, Washington, DC 20008-4030	(202) 328-2120	(202) 232-5602

1992-1995

Dr. Michael H. Brill	Science Applications, Int'l Corp., 1710 Goodrich Dr., MS-1-11-1, McLean, VA 22102	(703) 734-4027	(703) 821-3576
Prof. Bob Chung	Rochester Inst. of Tech., School of Printing, One Lomb Memorial Dr., PO Box 9887, Rochester, NY 14623-0887	(716) 475-2722	(716) 465-7063
Dr. Joel Pokorny	939 East 59th Street, Chicago, IL 60637	(312) 702-1983	

ISCC MEMBER-BODIES

American Association of Textile Chemists and Colorists (AATCC)
American Chemical Society (ACS)
American College of Prosthodontists (ACP)
American Psychological Association (APA)
American Society for Testing and Materials (ASTM)
American Society of Interior Designers (ASID)
American Society for Photogrammetry and Remote Sensing (ASPRS)
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Color Marketing Group (CMG)
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Dry Color Manufacturers Association (DCMA)
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Gemological Institute of America (GIA)

Graphic Arts Technical Foundation (GATF)
The Human Factors Society
Illuminating Engineering Society (IES)
National Artists Equity Association (NAEA)
National Association of Printing Ink Manufacturers (NAPIM)
National Paint and Coatings Association, Inc. (NPCA)
Optical Society of America (OSA)
Society for Information Display (SID)
Society of Motion Picture and Television Engineers (SMPTE)
Society of Plastics Engineers, Color & Appearance Division
Society for Imaging Science and Technology (IS&T)
Technical Association of the Graphic Arts (TAGA)
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