

# Inter-Society Color Council *News*

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## ISCC REPORT ON COLOR DIFFERENCES AVAILABLE

The Inter-Society Color Council (ISCC) announces the availability of ISCC Technical Report 90-1, "1989 ISCC Williamsburg Conference on Color Discrimination Psychophysics". This 64-page softbound booklet, reported by Fred W. Billmeyer, Jr., for the ISCC, documents the papers and discussion at an ISCC Williamsburg Conference held in November, 1989, on the subject of color discrimination psychophysics, which is to say color-difference measurement by both visual and instrumental means.

Five invited and ten contributed papers were presented at the Conference. The report contains the author's abstracts and the reporter's summaries of both the presentation and the ensuing discussion for all 15 papers. The Conference closed with extensive general discussion, and this is also summarized in the present report. In addition, the report includes an introduction, an executive summary, conclusions of the reporter, references, and appendices. Copies of ISCC Technical Report 90-1 may be ordered from Dr. Danny C. Rich, ISCC Secretary, c/o Applied Color Systems, Inc., P. O. Box 5800, Princeton, NJ 08540. The prepaid price is \$15.00. Readers of *ISCC News* will find a report on the Conference, largely taken from the executive summary of 90-1, in issue 323, pp. 7-9.

*Dr. Fred W. Billmeyer, Jr.*

Number 328

November/December 1990

## WILLIAMSBURG CONFERENCE FEB 24-26, 1991 CANCELLED

The Board of Directors, on the recommendation of the organizing committee, regretfully announces the cancellation of the 1991 Williamsburg Conference.

## NEWS FROM NIST

The following technical activities in the Spectrophotometry Group, NIST are pertinent to the ISCC Interest Group I.

1. Transmittance. An international Intercomparison of regular transmittance scales of NIST; PTB, Braunschweig (FRG); NPL, Teddington (UK); and OMH, Budapest (Hungary) has been completed for transmittances ranging from 0.92 to 0.001 with relative total uncertainty from 0.05% to 0.75%, respectively. The results have been published recently in *Metrologia* 27, 33-38 (1990).

2. Standard Reference Materials (SRM). SRMs for diffuse and specular reflectance (250 to 2500 nm) are being calibrated. These include white diffusers, black diffusers, first-surface gold mirrors, second-surface aluminum mirrors and black-glass reflectors. The planned completion date is December this year.

3. Bi-directional Scattering Metrology. The objective of this program is to develop methodology and standards for bi-directional reflectance distribution function (BRDF). A class 10 clean room will be installed and a goniometer will be constructed this year.

4. Intrinsic Standards. NIST plans to conduct a laboratory intercomparison to study the methods of preparation and uniformity of 45/0 reflectance factor of pressed polytetrafluoroethylene (PTFE) powder. A similar intercomparison of 6/hemispherical reflectance factor was conducted in 1985. Participating laboratories only need to prepare pressed samples. NIST will perform reflectance factor measurements on all prepared samples.

Interested laboratories should contact:

Dr. Jack J. Hsia

BLDG. 220, RM B-306

National Institute of Standards and Technology  
Gaithersburg, MD 20899

Phone: (301) 975-2342

Telex: 197674 NIST UT

FAX: (301) 975-4091

## Candidates for ISCC Directors

The Nominating Committee is very pleased to announce that five outstanding Council members have agreed to allow their names to be put forward as candidates for the office of Director for the three year term beginning in April of 1991. The Committee appreciates that they are willing to give their time and expertise to managing the Council.

There are three new members of the ISCC Board of Directors elected each year. The Board under the leadership of the President makes the decisions that keep the Council responsive to the needs of its membership. Since ISCC elections are contested, the Nominating Committee must put forward five names, although only three can be elected. Additional candidates can also be added to the slate if proposed by five voting delegates. Thirty days before the vote information about the candidates will be mailed to all voting delegates. The balloting will take place in time for the ballots to be received and counted before the ISCC Board Meeting on January 19, 1991.

The individuals selected by the Nominating Committee along with a short description of their backgrounds are given below.

Joy Turner Luke, *Chairman*



*Ellen Campbell Carter*

Ellen Campbell Carter received her B.A. degree in Chemistry from Manhattanville College in 1968 and her Ph.D. in Chemistry from Rensselaer Polytechnic Institute in 1972. Her graduate research was in the Rensselaer Color Measurement Laboratory under the direction of Professor Fred W. Billmeyer, Jr. Her research culminated in her Ph.D. thesis on the Application of Turbid Medium Theory to Metallic Paint Films. Ellen became a Senior Color Scientist in the Color and Standards Laboratory of the Sherwin-Williams Company. Since then she has become an independent color science consultant working for companies in the paint industry and displays technology areas. She served on the Editorial Board of the journal Color Research and Application beginning in 1984 and in January of 1990 she became Editor-in-Chief of that international journal. She joined the Inter-Society Color Council in 1969, while still a student at Rensselaer. She has been active on many of the Problems subcommittees including Project Committee #18, Colorimetry of Fluorescent Materials; Project Committee #22, Materials for Instrumental Calibration; Project Committee #27, Indices of Metamerism, and Project Committee #32, Image Technology. She was chairman of the Materials for Instrumental Calibration from 1974 until 1980. She presently serves on the ISCC Publication Committee where she has been an Associate Editor since 1988. She is also a member of the Council for Optical Radiation Measurements (CORM), the Optical Society of America, the U.S. National Committee of the CIE and the Society of Sigma Xi.

Robert Chung has been a faculty member in the School of Printing Management and Sciences, Rochester Institute of Technology since 1980. He holds the rank of Associate Professor and teaches color perception and color measurement, color separation systems, tone and color analysis, and quality control in the graphic arts. In addition to teaching, Bob serves as the Associate Director of RIT's Laboratory for Quality and Productivity in the Graphic Arts where he is active in conducting quality system audits and consulting work addressing quality improvement techniques and many aspects of the photomechanical color reproduction process. Bob is a member of the Technical Association of the Graphic Arts (TAGA) where he serves as a Director of the TAGA Board and as the Chairman of the TAGA delegation to the ISCC. Bob is also a member of Phi Kappa Phi, American Society for Quality Control (ASQC), Graphic Arts Technical Foundation (GATF) and International Graphic Arts Educator Association (IGAEA).



*Robert Chung*

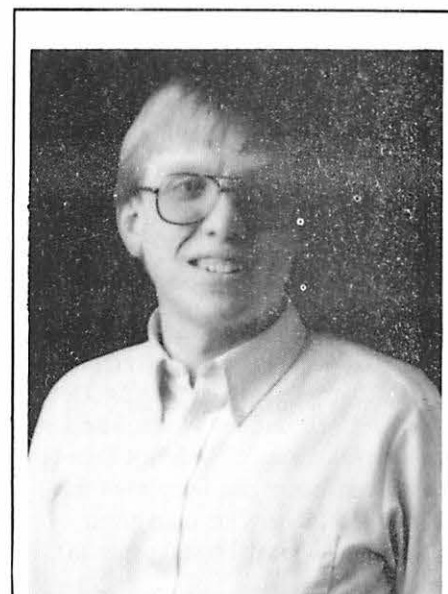


Mark Fairchild came to Rochester Institute of Technology in the fall of 1982 as a freshman in the Photographic Science program. Four years later he completed the requirements for the B.S. and M.S. degrees in that program, which had been renamed Imaging Science. Mark was a research assistant to Dr. Franc Grum in the newly formed Munsell Color Science Laboratory. Upon the completion of his B.S. and M.S. degrees, Mark was hired by the Department of Color Science at R.I.T. and he currently holds a faculty position in the Center for Imaging Science, which houses the Munsell Color Science Laboratory. He undertook a Ph.D. program in Visual Science at the University of Rochester while continuing his work at R.I.T. and completed his degree in the spring of 1990. Mark has been actively involved in research in the areas of colorimetric measurement, standardization, color perception and color vision. He has authored numerous papers, presentations and technical reports in these areas. He is a member of the ISCC, the Council for Optical Radiation Measurements (CORM), Optical Society of America (OSA) and the United States National Committee of the CIE (CIE-USNC). He is an OSA delegate to the ISCC and a member of CIE TC 1-27 on specification of color appearance for reflective media and self-luminous display comparisons.



*Joann Taylor*

Joann Taylor received her B.S. in Chemistry at Rensselaer Polytechnic Institute and under the direction of Fred W. Bil-Imeyer, Jr., received her M.S. and Ph.D. in Analytical Chemistry/Color Science, also from Rensselaer. Joann is a Principal Scientist at Tektronix Laboratories, Tektronix, Inc. Beaverton, Oregon. Her work involves the application of color to a wide variety of products including color display technologies such as CRT monitors, liquid crystal displays, and color printers, as well as test and measurement equipment. She is also responsible for the effective application of color to user-interface design and color user-oriented software tools. Joann is a co-inventor of the TekColor™ Color Management System, designed to provide a comprehensive set of color tools and utilities to the electronic color industry and she has played a major role in all aspects of the system's development, including the TekHVC™ Color Model, the Tekcolor Human Interface, and in the development of Device Characterization Methodologies. She is responsible for the ongoing research and technical development at Tektronix related to the TekColor™ CMS, to color in electronic imaging, as well as across other application areas. She has written a number of technical papers on a variety of color related topics and is an active member of ASTM E-12 on Appearance of Materials. She is an eleven-year member of the ISCC and has been active in the affairs of the Council, serving for the last four years as a voting delegate representing the Society for Information Display. She reports on the activities of SID as well as happenings in the electronic color industry on a regular basis in the ISCC News. In addition to maintaining an active interest in a number of ISCC Project Committees, Joann is also currently serving the ISCC as Chair of the Godlove Award Committee.



*Mark Fairchild*

Magenta Yglesias has been President of Designare, Ltd. Interiors since 1967. She established the firm as a full service organization providing interior design and space planning for large corporate clients across the United States, and also providing interior design and product design for residential clients. She supervised and trained a staff of 15 consisting of interior designers, student interns, craftsmen, installers and support staff. The Designare Showroom on Connecticut Avenue in Washington, D.C., catered to retail sales and featured exclusive and innovative products. In April of 1990 Magenta established a partnership with Thomas Shiner, AIA, to design and develop products for interiors and to provide a full service interior design firm. Magenta also became Chief Executive Officer of Jena International in April. Magenta has taught courses for the Smithsonian Institute Resident Associate Program, Mount Vernon College, and American University, and has been a frequent lecturer on the subject of Psychology of Color and Human Response and on Special Needs for the Disabled. Her projects have been featured in major newspapers and magazines across the country and she is the author of articles on color and light published in the periodical Designer's Portfolio. Magenta serves on the Board of the Metropolitan Chapter of the American Society of Interior Designers, as a Visual Arts Panelist for the District of Columbia Commission of the Arts and Humanities and as a Member of the Arts Facilities Development Committee at The American University. She has been Design Chairperson for the Sponsor's Room at the Folger Shakespeare Theatre and Professional Advisor to the Women's Committee of the National Symphony Decorator's Showhouse. With Dr. George C. Brainard she presented a poster paper, "Physiological Effects of Color on Normal Humans" at the International Colour Association meeting in Argentina in 1989. Magenta is Chair of the ISCC Interest Group III, Art, Design and Psychology, and Co-Chair of Project Committee #45, Physiological Response to Color, which is sponsoring a study on physiological effects of color being conducted at Jefferson Medical College in Philadelphia.



*Magenta Yglesias*

## GRAPHIC ARTS TECHNICAL FOUNDATION (GATF)



The GATF recently announced that its Hot

Topics series, up-to-date packets of select published information, now covers 43 of the hottest issues in the graphic arts, such as Desktop Publishing, Dot Gain, SPC, Hazardous Waste, Standards, and Recycled Paper. Each Hot Topic packet consists of photocopies of the best available literature on a given subject and averages 40-50 pages in length.

The topics included are: 1) Robotics, Artificial Intelligence, and Expert Systems in Printing and Publishing, 2) Computerization in Printing Management, 3) Computerization in Printing Production, 4) Training and Education for Printers, 5) Attaining Compliance with OSHA's Hazard Communication Standard, 6) Conductivity of Fountain Solutions, 7) Dot Gain, 8) Streaks in Printing, 9) Hickeys, 10) The Impact of Europe 1992 for Printers Today, 11) Computer Graphics for Designers, 12) Waterbased Gravure, 13) Web Press Auxiliary Equipment, 14) Recycled

Paper for Newspaper and commercial Printing, 15) Automatic Blanket Washers, 16) Pressroom Waste Reduction, 17) Color Measurement Tools, 18) Safety in the Pressroom, 19) Flexography in Newspaper Printing, 20) Alcohol Substitutes in Fountain Solutions, 21) Alkaline Paper, 22) Desktop Publishing, 23) Desktop Publishing Basics 24) Statistical Process Control, 25) Air Pollution Control in Heatset Web Offset Printing, 26) Ink Drying, 27) Quality and Process Control in Commercial Printing, 28) Keyless Lithography, 29) Coatings for the Printing and Packaging Industries, 30) Hazardous Waste Disposal and Minimization, 31) Mergers and Acquisi-

tions in the Graphic Arts, 32) Packaging and Publication Flexo, 33) Scanners for High-End Reproduction, 34) Standards for the Graphic Arts, 35) Inline Finishing, 36) Color Electronic Prepress Systems, 37) Gloss Ghosting, 38) Color Proofing, 39) Test Images, 40) Gray Component Replacement, 41) Direct-to-Plate Technology, 42) Printing Plant Layout, and 43) Electron Beam and Ultraviolet Curing for Printing and Packaging.

Each packet costs \$39.95 for GATF members and \$59.95 for nonmembers. For more information contact

TEL: (412) 621-6941;

FAX: (412) 621-3049.

## OBITUARY

### Keith "Mac" McLaren

On August 29, 1990 the international color community lost one of its lifelong contributors, Keith "Mac" McLaren. Mac began his career with the Dyes Division of Imperial Chemical Industries after obtaining his degree in Colour Chemistry at Leeds University. During this time he pioneered much of the early work in photochemistry to uncover the mechanisms of fading of textiles by light and laid the basis for modern British and International Test Methods for Light and Weathering Fastness. In addition to color fastness, he developed a great interest in the practical application of color control and computer match prediction, then in its infancy. In this area, as in color fastness, he was regarded internationally as an outstanding authority. In 1977, after 34 years of service with ICI, Mac became a director of Instrumental Colour Systems Ltd. where his enthusiasm for the subject of color measurement was maintained and he continued to share it with the global color community. Mac represented ICI and later ICS on a large number of technical committees of organizations such as the Society of Dyers and Colourists, the International Standards Organization, the British Standards In-

stitution and the Commission Internationale de L'Eclairage. For his work in the fields of fastness testing and color measurement, Mac was awarded the Silver and Gold Medals of the SDC and was later elected an Honorary Fellow of the Society, a distinction awarded only to members whose international recognition is outstanding. A man of great learning, he had over fifty publications to his credit. He had a particular gift for lucid writing and speaking, and his abilities as a lecturer were much sought after by the international technical community. His uncanny ability to "see" through the verbal fog made him an excellent participant and debater at symposia with his presence guaranteeing a large audience who profited from his attention to detail and precision. Those who knew Mac are richer for the experience of warm friendship and a mind ready to explore and share thoughts and ideas. He was always ready to help and participate and in the larger sense *still is* through the printed words he left us. Mac will be missed by his many friends and colleagues at home and abroad whose sympathies go out to his wife and constant companion Pat, at her sudden and very sad loss. *Ralph Besnoy*

## THERE WILL BE A NEW EDITOR OF ISCC NEWS

This is my last issue of the *ISCC News* as editor. It was with regret that I asked the Board of Directors to replace me. It has been my pleasure to serve in this capacity for the past few years. Unfortunately I am no longer able to perform the duties of this position satisfactorily. The lateness of these last two issues of the news is testament to that fact. It is with pleasure, however, that I can announce that Mike Hamel has agreed (and been confirmed by the Board) to assume primary responsibility for the *News*. He has been assisting me for the past year or two. Please provide him with the same support that you have given me during my tenure. *Bonnie K. Swenholt*

## COLOR RESEARCH AND APPLICATION

### In This Issue: October 1990

With the increased availability of instruments that are capable of measuring and calculating color differences, the use of such metrics is growing. Two of the articles in this issue describe the developments that have occurred during the decade between the 1979 Judd Memorial Conference on Color Metrics and 1989 ISCC Conference on Color Discrimination Psychophysics at Williamsburg, Virginia. In "European Practices and Philosophy in Industrial Colour-difference Evaluation" Roderick McDonald describes the degree of implementation of colour difference measurement in textile, leather, automobile, and coating industries throughout Europe. He compares the performance of the most widely used formulas, namely CIELAB, CMC, BFD, M&S, and Datacolor, and he describes the new computer graphics used to ensure continuity of colour from batch to batch. Rolf G. Kuehni focuses on the United States in "Industrial Color Difference: Progress and Problems". He surveys the industrial laboratories to determine which formulae are used by most people, and examines the efforts to improve the correlation between average visual judgement and calculated color difference.

Metamerism is the principle that two images may appear the same under certain conditions although they are different in other situations. Metamerism, an annoyance in some instances, is a boon to color display users. When the same image data are displayed on two monitors with different sets of phosphors, it is possible to make the images appear identical to the human observer. By knowing the camera responsivities and being able to specify the spectral power distributions of the illumination, the surface reflectance functions may be obtained and stored separately. In "Calibrated Processing of Image Color", David H. Brainard and Brian A. Wandell describe the design principles underlying a new generation of image processing software that integrates both spatial and

spectral image processing.

In recent years this journal has included a number of articles describing the color appearance models developed by Robert Hunt and Yoshinobu Nayatani, et al. However, the question asked by many is how much do the results differ between these two models. Now the designers of one of the models Yoshinobu Nayatani and his co-workers Toshinori Mori, Kenjiro Hashimoto, Kotaro Takahama, and Hiroaki Sobagaki use the color perceptions of colorfulness, the Helson-Judd effect, and brightness and lightness to contrast the two models in "Comparison of Color-Appearance Models".

In current models of color vision the signals from R, G, and B cones are processed through three channels, two differencing (color) channels and one summing (luminance or achromatic), channel. The color channels are commonly named the r-g (redness-greenness) channel and the y-b (yellowness-blueness) channel. The achromatic channel is usually called V. The problem is to discover the exact transformation involved when going from the fundamental responses to the channels. It seems that for the long-wavelength half of the spectrum, the channel that carries the yellowness signal carries no information which could not be received in from other paths. This redundancy suggests the possibility of a partially shared pathway for V and +y. In "Test for a correlation between V and the +y opponent-channel sensitivity", Carl R. Ingling, Jr., Eugenio Martinez-Urieas, and Scott S. Grigsby find that the +y transformation, although not linearly independent, is not related simply to the flicker channel transformation or in other words the spectral sensitivity for +y appears unrelated to the spectral sensitivity of the achromatic channel estimated by flicker photometry.

Recent studies of visual memory suggest that there are at least three components: sensory memory, short-term visual memory, and long-term visual memory. Experiments involving achromatic patterns have made it possible to isolate and distinguish between the components of visual memory. However, most color memory

studies have concentrated on the description of performance, rather than attempting to dissociate the memory components. In "Serial position curves for colored light patches", Stephen E. Avons and Shelley A. Daley describe a series of experiments measuring serial position curves for color using standard recognition memory paradigms.

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## GEMOLOGICAL INSTITUTE OF AMERICA (GIA)

### New Scholarship Fund at GIA Honors Kurt Wayne

A fund that will provide scholarships to deserving students for training at the Gemological Institute of America has been established by the family of the late Kurt Wayne in honor of their father. The scholarship will both memorialize Kurt Wayne and perpetuate his standard of quality in design and manufacturing. Bill Boyajian, GIA president, said, "Kurt Wayne was a great craftsman. This scholarship is a fine memorial to him. We're honored to be able to offer gemological training in his name." The spring issue of *Gems & Gemology* is a special expanded retrospective of gemology and the jewelry industry in the 1980s. There are five major articles highlighting major gem producers, gem treatments, the synthetic market, technological advances, and trends in the jewelry industry. A detailed reference chart for detecting enhancements in different gems and a comprehensive table of gem localities are included in the issue. For more information call (800) 421-7251 ext. 201 or write GIA *Gems & Gemology* Circulation Dept. PR06, P.O. Box 2110, Santa Monica, California, 90406-2110. The summer issue of *Gems and Gemology* contains a comprehensive article on the identification of blue diffusion-treated sapphires. The issue also includes a warning on diamond grit-impregnated tweezers and reports on tsavorite gem crystals from Tanzania and jadeite deposits in Guatemala.

## In This Issue: December 1990

Generally the measurement of color is done with spectrophotometers using a specified and constant geometry. However, there are several applications where measurements at several or different geometries are necessary. Characterization of metallic or pearlescent materials, testing of optical laws such as Helmholtz reciprocity law, examining standard materials, and investigating goniochromatism are examples in which color measurement at several multiple angles is important. For these applications instruments called goniospectrophotometers have been developed. Goniospectrophotometry, as can be surmised by breaking the word into its parts, is the measurement of visible radiation as a function of wavelength, illuminating angle and viewing angle. Mark D. Fairchild, Denis J. O. Daoust, Jason Peterson, and Roy S. Berns review the development and types of goniospectrophotometers available. With the advent of increasing use of multiple measurement angles, the need for well-characterized standard materials for calibration has developed. In their article "Absolute Reflectance Factor Calibration for Goniospectrophotometry", Fairchild and his coauthors tackle the problem of providing primary standards that are characterized at many combinations of illuminating and viewing geometries. Their purpose was to develop suitable primary transfer standards for gonio-spectrophotometry.

Computer controlled cathode ray tube (CTR) displays are used for applications ranging from displaying text to animated graphics. Color displays are gaining wider acceptance because they add interest, enhance coding capabilities, and provide easily generated color for psychophysical studies. When color CRT displays are used in research it is important to have a well-defined input-output calibration. Full monitor calibration can be very time consuming. In "Evaluation of a Simple Method for Color Monitor Recalibration", Marcel P. Lucassen and Jan Walraven describe a recalibration algorithm which reduces measurements to a minimum. A single

measurement may result in an acceptable recalibration, and can also keep track of slow changes that may finally necessitate a full recalibration of the monitor.

In a continuation of Neville Smith, T. W. Allan Whitfield, and T. J. Whiltshire's studies involving comparison of color order systems, two articles are included in this issue. The first "Comparison of the Munsell, NCS, DIN, and Coloroid Colour Order Systems Using the OSA-UCS Model", contrasts the perceptual scaling for the four systems when OSC-UCS is used as the common basis. The second article by the same authors is a description of "A Colour Notation Conversion Program", which has the capability to inter-convert among the following systems: CIE Color Space, CIELAB, CIELUV, Coloroid, DIN, Munsell, Natural Color System, and Optical Society of America-Uniform Color System.

Color appearance is generally agreed to be three dimensional. Ralph W. Pridmore uses the dimensions of psychophysical saturation, luminance or brightness, and dominant wavelength to find fundamental relationships between the saturation and brightness dimensions of perceived color. In his article, "Model of Saturation and Brightness: Relations with Luminance", Pridmore derives a model and compares it to available data from literature. Predictions support Hunt's concept of colorfulness.

In the final section of this issue the readers will find the five year index for this journal. It is arranged both by author and subject heading. What is more, this is the last five year index. Beginning in 1991, there will be an annual index in the final issue of each volume.  
*Ellen Carter, Editor, CR&A*

## ROCHESTER INSTITUTE OF TECHNOLOGY TO OFFER SHORT COURSE IN COLOR SCIENCE

RIT's Munsell Color Science Laboratory will present "Colorimetry: An Intensive Short Course for Scientists and Engineers", June 11-13, 1991. Early enrollment is suggested. Directing the program will be Dr. Roy S. Berns, director of the Munsell Laboratory and Richard S. Hunter Professor of Color Science, Appearance and Technology. The Munsell Laboratory, located in the Chester F. Carlson Center for Imaging Science on the RIT campus, is considered the best-equipped academic laboratory in the country for color measurement. The in-depth short course provides fundamental information about color science and engineering required to understand and make effective use of colorimetric instrumentation, theory and practice. Topics include: perceptual attributes of color; Munsell color order system; physics of light sources and objects; principles of spectrophotometry; instrumentation selection guidelines; color vision; trichromatic theory and the derivation of CIE colorimetry;

CIE uniform color spaces and color difference equations; weighted hue, lightness, and chroma color difference equations; visual and instrumental methods of color tolerancing; sampling and instrumentation statistics; illuminant metamerism; and applications of colorimetry to industrial color control. The course takes advantage of state-of-the-art audio/video technology. Color measurement instrumentation and full-color image processor are brought into the lecture facility enabling interactive equipment demonstration and visual experiments. The course is highly beneficial to persons involved in coatings, textiles, polymers, reprographics, and electronic imaging. For further information, contact Colleen McCabe, Munsell Color Science Laboratory, Rochester Institute of Technology, Chester F. Carlson Center for Imaging Science, P.O. Box 9887, Rochester, NY 14623-0887; (716) 475-7189.

*News Release, Vince Dollard, Comm. Dept. RIT*

## CALLS FOR PAPERS

See insert for a very important call for papers!!

### CORM 91 FIRST CALL FOR PAPERS: SPECTRAL IRRADIANCE MEASUREMENTS AND ULTRAVIOLET RADIOMETRY

May 21-22, 1991

National Institute of Standards and Technology (NIST), Gaithersburg, MD

The Council for Optical Radiation Measurements (CORM) solicits contributed papers on the general topic of ultraviolet radiometry for its 1991 Annual Conference (CORM 91). The conference will be held at the Green Auditorium at NIST in Gaithersburg, MD and will last two full days. Tuesday, May 21, 1991, will be a whole-day tutorial session on *Spectral Irradiance Measurements*. This session will be organized by William E. Schnauzer (Optronic Laboratories, Inc.) and will include presentations on the types of spectral irradiance standards provided by NIST, how they are calibrated, how their calibrations are transferred to secondary standards and how the standards are used in practice. The CORM annual business meeting will be held at the end of the day, followed by the traditional banquet and invited presentation by the Franc Grum lecturer. Wednesday, May 22, 1991, will feature contributed papers on *Ultraviolet Radiometry*. The UV radiometry session will be chaired by Theodore W. Cannon (SERI). CORM 91 will also include a tour of the Radiometric Physics Division of NIST and an opportunity to review research with its staff members. Contributed papers on UV radiometry are invited from standards laboratories, academia, and industry. Emphasis should be placed on biological radiometry, earth irradiation measurements, and detoxification. Anyone wishing to present a paper or needing additional information should contact the program coordinators at the following addresses:

Dr. Klaus D. Mielenz  
Nat'l Institute of Standards  
and Technology  
Gaithersburg, MD 20899  
(301) 975-2316

Dr. Bruce Guenther  
Standards and Calibration Office  
NASA - Mail Code 920.1  
Greenbelt, MD 20771  
(301) 286-5205

## CALENDAR

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

## 1991

### ASTM COMMITTEE D-1 ON PAINT, Jan. 20-24

Embassy Suites Hotel, Ft. Lauderdale South, Florida. Information: Scott Orthey, (215) 299-5507.

### ASTM E-12 ON APPEARANCE, Jan. 21-24

Embassy Suites Hotel, Ft. Lauderdale South, Florida. Information: Bode Buckley, (215) 299-5599.

### COLOUR GROUP 50th BIRTHDAY, Feb. 13-14

Colour Group Golden Jubilee, Institute of Physics, 47 Belgrave Square, London, SW1X 8QX. Information: J. A. F. Taylor, National Physical Laboratory, Queens Road, Teddington, Middlesex, TW11 0LW.

### SPIE/SPSE SYMPOSIUM, Feb. 24 - Mar. 1

Electronic Imaging Science and Technology, San Jose Convention Center, San Jose, California. Information: SPIE, P. O. Box 10, Bellingham, WA 98227-0010, (206) 676-3290.

### CMG - SPRING MEETING, Apr. 7-9

Color Marketing Group Spring Meeting, Hyatt Regency, Dearborn, Michigan. Information: Nancy Burns, (703) 528-7666.

### COLOUR AND APPEARANCE IN FOLKLORE AND DISPLAY, Apr. 13

Sponsored by the Colour Group (G.B.) and the Folklore Society at the Institute of Classical Studies, Gordon Square, London, England. Information: John Hutchings, 6 Queen's Road, Colnworth, Bedford MK44 2LA.

### ISCC ANNUAL MEETING, May 5-8

Held jointly with CAUS, Doral Inn Hotel, New York City, New York. Information: Evelyn Stephens, (212) 760-7871.

### SID INTERNATIONAL SYMPOSIUM, May 6-10

Society for Information Display -27th Annual Symposium, Seminar, and Exhibition, Anaheim Convention Center, Anaheim, California. Information: (213) 305-1433.

### FSCT SPRING WEEK, May 13-16

Sheraton Society Hill, Philadelphia, Pennsylvania. Information: (215) 545-1506.

### AIC INTERIM SYMPOSIUM, COLOUR & LIGHT, Jun. 24-29

Sidney Australia. Information: The Colour Society of Australia, P.O. Box 63, Concord West, N.S.W. 2138, Australia.



## MEMBERSHIP IN THE ISCC

IS OPEN TO EVERYONE INTERESTED IN COLOR!!

For further information and membership application, please fill out the items below and mail to the address shown.

Your name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

MAIL TO: Ms. Anne Laidlaw OR: Tel: (919) 274-1963  
Shelyn Incorporated FAX: (919) 274-1971  
1108 Greccade Street  
Greensboro, NC 27408

*The ISCC is composed of both individual members and member bodies who have an interest in color. If you are a member of a national organization that might be interested in this affiliation, please indicate its name below and we will get in touch with you about it.*

Organization \_\_\_\_\_

Your Phone No. (daytime) (\_\_\_\_\_) \_\_\_\_\_

## NEWSLETTER EDITOR:

Mr. Michael Hamel

Send material for publication (photos should be black and white if possible) to the editor at:

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

If possible, 5 1/4 inch diskette with ASCII text file for MSDOS, or send via MODEM.

For hard copy transmission, FAX to (716) 425-2411.

Or send material to Mrs. Bonnie K. Swenholt at:  
5717 Gulick Rd.  
Honeoye, NY 14471

Or send to Dr. Ellen Carter:  
2509 N. Utah St.  
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The deadline for submission of material is the 15th of even numbered months.

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