



AIC REGULAR MEMBERS

M. Rossi¹, V. Cheung², I. Calvo Ivanovic³

AUSTRALIA

COLOUR SOCIETY OF AUSTRALIA (CSA)



Colour Society
of Australia

Knowledge
Inspiration
Community

The Western Australian Division of the Colour Society of Australia held our National Conference for 2023, Colour Sense and Sensibility in Perth on October 12-16. A welcoming event on the evening of the 12th was followed by two days of sessions presented live on site and from two international presenters via Zoom.

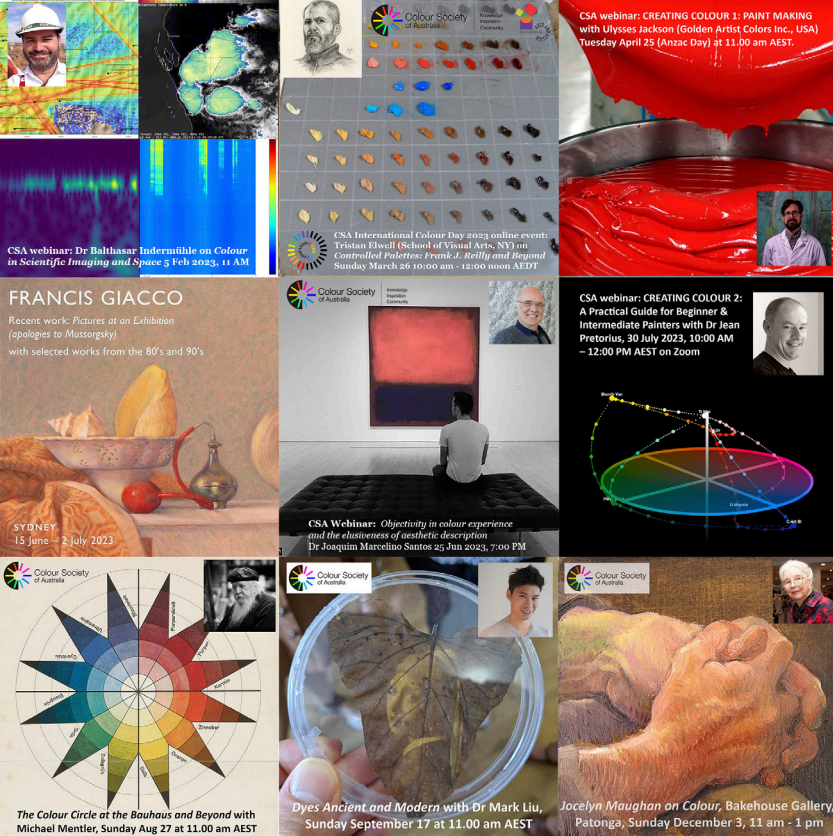
On the first day, introductory addresses by CSA President **Mike Dixon** and **Tony Marrion** were followed by the keynote presentation, Colours of Objects and Colours of Light, by CSA Past President **Dr David Briggs** (available on the CSA YouTube channel at <https://youtu.be/ii9dWIG9nOY>), Art Between Cultures by **Deborah Bonar**, Psychology of Aesthetics by **Ruth Marrion**, The Colour Orange by **Juliet Albany**, International “Colour Literacy Project” chaired by **Dr Paul Green-Armytage** with **Maggie Maggio** via Zoom from Oregon, USA, and **Collette Harrison** via Zoom from Manchester, UK, and Coloured Reflections by **Dr Dianne Smith**. The second day saw presentations on Textile Colours from Plants by **Trudi Pollard**, Colours of Fungi by **Roz Hart**, and The Nature of Redness by **Dr Natalie O’Connor**, followed by workshop activities on the Language of Music and Colour by **Tony Marrion** and Colour Games by **Dr Paul Green-Armytage**. On the final day, 20 participants attended an excursion to Cypress Farm near Waroona. A collection of photographs from the conference by Paul Green Armytage can be downloaded at [this link](#).

CSA National Conference 2023

The WA Division also held the following events earlier in the year:

- January 12: an art session with **Deborah Bonar** at Mildenhall, Duncraig
- February 13: a meeting with **Dr Jo Jung** at Edith Cowan University to explore student project for the development of promotional material for the National Conference
- February 25: two artist talks and a painting workshop at Victoria Park
- March 21: a visit to **Trudi Pollard’s** studio and “colour garden” for International Colour Day





CSA Webinars 2023

- August 27: The Colour Circle at the Bauhaus and Beyond with multidisciplinary Texan artist **Michael Mentler**
- September 17: Creating Colour 3: Dyes Ancient and Modern with fashion and textile designer **Dr Mark Liu**
- December 3: Jocelyn Maughan on Colour, our in-person, end-of-year event at the Patonga studio of eminent artist and educator **Jocelyn Maughan OAM**

The New South Wales Division continued its series of free webinars as well as having two in-person events; for details, please see our annual report at <https://coloursociety.org.au/resources/CSANSWAnnRep2023.pdf>

- February 5: Colour in Scientific Imaging and Space with **Dr Balthasar Indermühle**, Senior Experimental Scientist at CSIRO Astronomy and Space Science.
- March 26: ICD 2023 event (with SGAD), Controlled Palettes in Painting with **Tristan Elwell** (School of Visual Arts, New York) speaking on the mid-20th century American illustrator and art teacher Frank J. Reilly, introduced by Professor Maria João Durão and with an introductory historical background to the Munsell system presented by David Briggs.
- April 25: Creating Colour 1: Paint Making with **Ulysses Jackson**, Head Formulator and Research and Development Supervisor for Golden Artist Colors (USA)
- June 25: Objectivity in colour experience and the elusiveness of aesthetic description with **Dr Joaquim Marcelino Santos**
- July 1: an in-person visit to exhibitions by **Francis Giacco** (Australian Galleries) and **Kerry McInnis** (Wagner Contemporary)
- July 30: Creating Colour 2: A Practical Guide for Beginner and Intermediate Painters with CSA Past President **Dr Jean Pretorius**

Video recordings of our presentations for International Colour Day and the creating Colour series are free to watch on the [CSA YouTube channel](#), while our other recordings from this year and previous years are available to Members via the CSA website.

The Annual General Meeting of the Colour Society of Australia was held on December 18 on Zoom, and President Mike Dixon (WA), Vice President David Briggs (NSW), Secretary Glenys Thomson (Southern Division), Treasurer Emily Guo (NSW), and Membership Secretary Julie Blackmore (Queensland) were all re-elected unopposed.

Please see the [CSA website](#) for our first events for 2024, namely Creating Colour 4: Dynamic Colour in Digital Art with Steve Forster (Long Island Academy of Fine Art) on February 17 and our ICD event held jointly with Museums of History Sydney, looking at the colour teaching of Phyllis Shillito.

BELGIUM

INTERDISCIPLINARY COLOUR
ASSOCIATION BELGIUM, ICA-BELGIUM



In 2023 we continued with our (free) online **Sunday Morning Colour Talks**. The online talks are regularly attended by participants from more than 30 countries and are generally fully booked. We are very grateful to the speakers and the participants for their enthusiasm and interest. The colour talks will continue into 2024 as well.

In January, our first speaker of the 2023 was **Maria Høgh-Mikkelsen** who spoke about artistic research on colour design.

On Sunday, March 19, we celebrated **International Colour Day online**, with three international speakers:

- **Anat Lechner** spoke about Color Design in the Age of Artificial Intelligence.
- **Julia Hausmann** presented The fourth dimension - Colour in dialogue with art and architecture.
- **Alexandra Loske** spoke about Lives in colour: Pioneering women in colour history.

In June, our speaker was **June Mineyama – Smithson**, whose talk was about Colours of Optimism. In November, **Timo Rieke** spoke about Colour Education & the Politics of Colour. In December, we closed the year with the colour talk of **Pedro Ruxa: Colour in My Mind**.

More information and video recordings can be found on our website (ica-belgium.org) under past events or on our [YouTube Channel](#).

On 1 April 2023 we held a 1-day colour design workshop, *Who's afraid of red, yellow, and blue? Perception, Interaction, Meaning* in Antwerp.

The workshop explored the relationship between colour, personality, shape, composition and scent by discovering the foundations of colour design.

It was composed of four parts: Personality Design, Interaction of Colour, Colour & Meaning and Applied Synaesthetic. The lecturers were Inez Michiels, Jeannette Hanenburg and Maja Kaurin.

The workshop was sponsored by RAL Colours which enabled us to offer deeply discounted rates to university students. We were thus happy to see interior architecture students of Antwerp University taking part in the workshop along with other design professionals. All the proceeds of the workshop went for the support of ICA-Belgium.

NEWS FROM ICA-BELGIUM MEMBERS

By **Felix A. D'Haeseleer**

<https://leseminairedecouleurs.wordpress.com>

During the year 2023, I led the two scheduled seminars on color in Brussels and a special seminar with architects in Marseille; I taught my four-hour hands-on "*Leçon sur la couleur*" in the painting workshops at the Arlon Academy and, once more, in the Antichambre program at La Cambre.



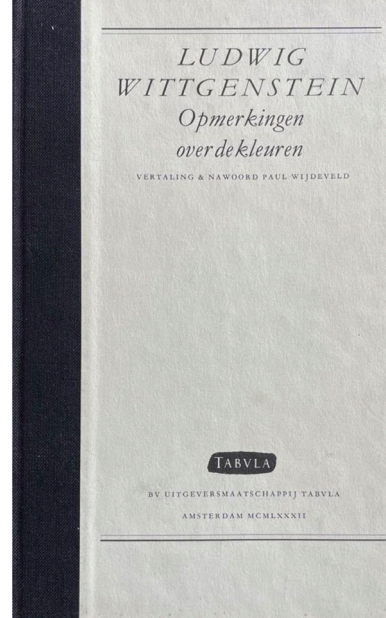
ICA-Belgium Colour Talks in 2023



ICA-Belgium Colour design workshop: Who's afraid of red, yellow, and blue? Perception, Interaction, Meaning (April 2023)

The library of “*Le Séminaire de Couleur*” was further enriched with several books on color, among them, two didactic books, one from the Ecole professionnelle de typographie (1910), the other from the Don Bosco Technisch Instituut (1963) both in Brussels; the famous “*Problèmes de la couleur*,” a collective under the direction of Ignace Meyerson (1957) and a pristine first edition (1982) of the Dutch translation by Paul Wijdeveld of Ludwig Wittgenstein’s Remarks on colour.

Two seminars on color are on the 2024 calendar, in French. On demand, I also lead the seminar and teach the lesson in Flemish and English.



Felix A. D’Haeseleer: Ludwig Wittgenstein’s Remarks on colour, Dutch translation by Paul Wijdeveld (1982)

The construction of the first copy of “*S’Aiguiser l’oeil à la couleur*”, my book for autodidacts and bibliophiles is in the process of being completed; a special “*table-read*” will be dedicated to it and a video-clip will be posted on social media.

ICA-BELGIUM PLANS FOR 2024

In 2024 we plan to continue with our Sunday Morning Colour Talks.

On Sunday, March 17 we will celebrate *International Colour Day* online.

On 27 April 2024 we will hold a 1-day Workshop *COLOUR STORIES: Colour Mapping the Living Past* - an Investigation into the Colours of Antiquity, Reimagining a Colour Narrative.

The workshop will be held at the Gallo-Roman Museum, in Tongeren, and it is part of the exhibition ‘Antiquity in Colour.’

In October another ICA-Belgium workshop will be taking place: *Colour Trend Research Workshop*, this time in collaboration with colour trend forecaster Anna Maria Nyk, at her studio in Delden in the Netherlands. All our upcoming events can be found on ica-belgium.org.

BRAZIL

ASSOCIAÇÃO PRÓ-COR DO BRASIL



ProCor's members are very active and in this issue of the Annual Review we highlight some of our members' projects.

Claudia Bavaresco worked in 2023, the “Natureza da Cor” project persists in its transformative mission. Originated from the connection with nature and recording images of nature, transforming images into inspiring palettes, promoting the conscious use of colors in fashion, work and everyday life. Simple and accessible, the “Natureza da Cor” project explores how to unveil colors in a simple way through inspirations from nature, and reveal, in a unique way, the potential that colors have to offer. In the past year, I was still able to notice the resistance that many women face when harmonizing their tones, and creating a color palette. The project came to simplify and encourage women to use colors through what nature offers. With the project, fears and insecurities were dispelled, “Nature of Color” highlights that combinations from nature are not only reliable but are also assertive and perfect. Colors become allies, inspiring confidence and beauty in each choice.

At Universidade Federal Fluminense - UFF (Rio de Janeiro, Brazil) Professor **Dr. Gisela Monteiro** coordinated the extension project “Color applied to Design”, in a pro bono partnership with **Dr. Robert Hirschler**. The team also included two students from the Industrial Design course: **Josué Neves** and **Pedro Viana**. In this first year, the result was the holding of

the “Color with purpose” workshop on November 23, 2023, at UFF. On the day, students were encouraged to choose colors and apply them to shoes, furniture, and clothing so that they realized that the chosen colors change depending on the combinations made.

Nelson Bavaresco worked on an effort to promote Color Art and Science in Brazil. This is work carried out using three tools: Color Disc, to find and organize chromatic harmonies through a rotating disc. With it it is possible to make up to 100,000 combinations, in chords of one to four colors. HarmColor Card, a manually manipulated fan, where colored strips can adjust to follow a certain chord, when it can be seen by the user. Color Harmony Book, which presents the fundamentals of color combinations, as well as countless suggestions for schemes for different purposes. Comes with a strap harmonizer.

Pablo Manye brought that the year 2023 has been a significant one for the world of colour in Ceará, Brazil. Firstly, it is worth highlighting that, from this year onwards, the State of Ceará will celebrate its official Day of Light and Colour: Chromology Day, unanimously approved by the Legislative Chamber and endorsed by Governor Elmano de Freitas da Costa, under Law No 18.396. The 21st of September is designated as the State Chromology Day in the official calendar of Events and Commemorative Dates of the state of Ceará, as stated in the law.



Claudia Bavaresco's Project



Gisela Monteiro's Workshop



Nelson Bavaresco's Book



Pablo Mayne's Project

Academically, the State University of Ceará (UECE) has introduced the subject of *Chromology: Colours and Art in the Context of Health*, as part of the Occupational Therapy Course. Extension projects such as 'Chromology: Studies and Practices with Light and Colour', exploring its potentialities at the intersection of art and health, have gained notable traction. Additionally, in the stricto sensu postgraduate programme, the Professional Master's in Health (CMEPES) at UECE now includes the course: Chromology, Colours in Health.

On the 21st of January 2023, Aula-Luz (Light Class), as the winning project of the Ceará Art Season call, presents the Antônio Conselheiro House, its educational show on Light and Colour from a Chromological perspective. The event was supported by the Dragão do Mar Institute and Antônio Conselheiro House in

Quixeramobim in Ceará, the Secretary of Culture, and the Government of the State of Ceará.

On the 6th of February, 2023, **Pablo Manyé** was invited to give a Master Class at the Professor Darcy Ribeiro Academy, aimed at teachers from public schools in Ceará, titled: Chromology: Light and Colour in the Classroom. This event was sponsored by the Open University of Brazil, the Municipality of Fortaleza, and the City of Design of Fortaleza: UNESCO, Member of the Creative Cities Network worldwide.

Also, ProCor held two events, one on September 2023, with a lecture on chromatic design tapestries, by famous Brazilian brand Punto e Filo, and another on March 2023, with an NCS course for members.

For info about these events and more info about ProCor, please visit: <https://www.procor.org.br/category/noticias/>

BULGARIA

COLOUR GROUP - BULGARIA

ГРУПА ЦВЯТ
БЪЛГАРИЯ



COLOR GROUP
BULGARIA



ИЗЛОЖБА
МОДУЛАРТ
Величка Минкова

06 - 31 март 2023 г.

TechnoMagicLand
територия за любителковци

бул. "Цариградско шосе" 111Б

Color Group - Bulgaria during 2023 continued work on various ongoing projects. We celebrated International Color Day on March 21 with a collective visit to an exhibition by Prof. **Dr. Velichka Minkova** - a member of the Color Group - Bulgaria. Velichka Minkova's solo exhibition, "MODULART", presents 32 digital works created between 2008 and 2022, the result of her years of research in the field of the quadratic modular grid and in particular its ability to generate artistic images. According to the artist, each square is an atom, constituting an element of a complex visual fabric. The modules created through self-similarity and geometric transformations shape an organism, an image that is seemingly disconnected but can evolve indefinitely. Minkova says that the works presented in the exhibition emerged in her attempt to clear the doubts of her students that combinatorics is not only a principle of form-making in visual arts or a formula for a correct configuration. It should be seen as an inspiration, the beginning of a different creative process developing at the boundary between science and art.

In 2023, was published volume 6 of the series "BALKANCOLOR" (ISSN 1313-4884), compiled by **Dr. R. Geleva-Tsvetkova** with 5 studies in the field of color and color science. **Valentin Petrusenko** dwells on the interesting topic of color perception based on his field studies in „Tropical Color and Aroma: Some Ontological Notes“. **Elena Davcheva** presents the study "Colours in the Orthodox Church", in which she examines the main moments of the canon and its application in the artistic

BALKANCOLOR - 6



ISSN 1313 – 4884



2023

Съвременни технологии в
културно-историческото
наследство



XI-та Научна конференция с международно участие

design of churches. **Ralitza Geleva** in “The artistic layout of the tourist hut “Martsiganitsa” presents a study of a monumental ceramic project by Maria Nozharova, as well as aesthetic and artistic merits and elements specific to the author. The main goal of the study is to present the work in its entirety and to preserve information about it, given the upcoming sale of the building and its reconstruction. **Nikoliay Petrusenko** presented an interesting aspect of virtual graphics by analyzing binary codes in “Black or white, dark or light, yes or no, translated into binary code 01111001 01100101 01110011 00100000 01101111 01110010 00100000 01101110 01101111 000 01010”. **Tatyana Hristova** analyzes works presented in Sofia as part of a larger artistic and public project in “Basat Collection”.

On December 15-16, 2023, the 11th Scientific Conference with international participation “Modern Technologies in Cultural and Historical Heritage” was held. The

conference is organized annually under the “Art and Living Environment” Project, in partnership of Color Group Bulgaria with the “Heritage of BG” Project. Participants were from 13 Universities, Bulgarian Academy of Sciences, Center for the Restoration of Artistic Values - collective member of the Color Group - Bulgaria, Research centers, Museums and Organizations from Bulgaria and Portugal, Italy, Serbia, Macedonia and Ukraine. Plenary reports were given by **Prof. arch. Yordanka Kandulkova** - Bulgaria and academic arch. **Nikola Cekic** – Serbia. 43 reports were presented in 5 thematic directions, focused on problems and research of the cultural-historical heritage, digitalization and technical innovations. Emphasis was placed on projects and sustainable practices to explore, preserve and present traditional skills and activities in relation to the 2023 European Year of Skills. All presented materials will be published in a refereed collection in 2024 under the editorship of eng. **Milka Ivanova**.

CANADA

COLOUR RESEARCH SOCIETY OF CANADA



COLOUR
RESEARCH
SOCIETY OF
CANADA

SOCIÉTÉ
CANADIENNE
DE RECHERCHE
SUR LA COULEUR

The CRSC had a very active year, hosting online lectures and several members' events. The Board of Administration had a productive year building the organizational infrastructure, including the development of a new website, and updated administrative capacities and procedural and privacy policies. Many thanks to Haft2 for generously providing design work and support for the identity and web development. And thanks to our Treasurer, Venkat Venkataramanan for spearheading our development of a comprehensive Code of Procedures and Privacy policy.

This year we welcomed new Board Members **Lora Di Fabio** and **Emily Grundy**. Lora is Design & Development Manager at American Biltrite where she leads the design development of flooring products and marketing materials. She is a Board Member for the Color Marketing Group® (CMG) and serves on the CMG Color Forecasting Committee. Emily, a Toronto based abstract artist, is the Division Manager of Design at Sherwin-Williams, responsible for Canadian national designer marketing. She is involved in the colour forecast team, researching aspects of colour that shape the Canadian residential colour trends.

INTERNATIONAL COLOUR DAY

As is our tradition, the CRSC celebrated International Colour Day with a Keynote lecture following our Annual General Meeting. Our 2023 speaker was **Donald Chrétien**, of Nipissing First Nation, speaking about the role of colour in his work. *"The unique style and impact of Aboriginal fine artist Donald Chrétien springs from his combined passion for colour and woodland-style expression. His ongoing exploration of his heritage has him concentrating on distinct features of Ojibwe clans acrylic on canvas."* (from: <http://donaldchretien.com/about/>).

Our **Kaleidoscope Lecture Series** continued. These online lectures are open to the public, consistent with our mandate to widely share colour knowledge. Recordings are available in the new Members' Area of our website. In addition, we began an agreement with the Colour Society of Australia, to mutually share our archives of colour talks with CSA and CRSC members.

- January: **CC Hart** presented *Bone Stories: synesthesia, neurodiversity, and anatomy in colour*. A neurodiversity advocate, artist, author, and manual therapist, CC is founding board member of the International Association of Synaesthetes, Artists, and Scientists (IASAS).
- February: **Dr. Ingrid Calvo Ivanovic** gave a talk on *Ethical colour: Towards colour sustainability in design*. Ingrid, Assistant Professor, Design Department, Universidad de Chile is a member of the AIC Board, and on the Editorial Board of Color Research & Application.
- September: **Hues on the Menu** provided a fascinating panel discussion with **Montaha Hidefi, Sara Nelson, Aralia Maxwell, Vivian Lo** on the topic of colour and food.
- October: **Rebecca Hannon**, associate professor of jewellery design and metalsmithing, and co-director of the Dr. Sandra Alföldy Craft Institute at NSCAD University, showed her work in a presentation entitled *Contemporary Camouflage*.
- November: **Emily Grundy** and **Victoria Young** shared and discussed the *2024 Colour Trend Report* from Sherwin Williams, a biennial collection of forty-eight hues that are influencing colour trending.

Our **Members' Nights & Events** included a tour of McRae Imaging, led by CRSC Board member Venkat Venkataraman.

McCrae Imaging is a company specialising in large format, fabric-based displays. We also held two online Members' events where we discussed the *Visual Impact of Wildfires on our Local Landscape* (September) and hosted a very successful book club (December) on *All the Colour in the World*, with special guest author CS Richardson.

2023 STUDENT AWARDS

This year, the CRSC Student Award was presented to two winners (a tie!). Congratulations to our 2023 Graduate Award Winners: **Carolina Espinoza-Sanhueza** at Université Laval, for her work on *Biophilic light and colour design in extreme latitudes: conciliating northern occupants' well-being through photobiological responsive indoor ambiances*, and **Emitis Roshan**, for her doctoral work at Simon Fraser University on *Metamer mismatching and its implications*. Thanks to Haft2 for their generous support of the CRSC Student Awards.

MEMBERS' NEWS

Congratulations to **Jayanne English** who was elected as a Member of the Order of Canada (June 30, 2023), 'for her innovative work at the crossroads of science and art, and for making astronomy accessible to all'. As a trained artist and astronomer, Jayanne has developed 'Cosmos and Canvas', an extensive series of educational lectures and workshops for professional astronomers about colour use in scientific visualization, as well as accessible lectures for the general public. In 2023, she presented workshops at Ruhr University, Cambridge University, and ASTRON - the Netherlands Institute for Radio Astronomy. She collaborated with Mark Richardson, Gilles Ferrand, and Nathan Deg, on *CosmosCanvas*, a python code for perception-based colour tables submitted to the Astrophysics Source Code Library. A sample of her work can be found in the [Image of the Polar Ring Galaxy, NGC 4632](#).

Doreen Balabanoff published a paper in *Colour Research and Application*, *Color, light, and birth space design: An integrative review*. Doreen has been involved in research over the past fifteen years seeking to foment transformational change for birth environment design, with particular attention



Image from McCrae Imaging Tour

to the phenomenological aspects of light/colour/darkness that impact birth experience and outcomes. With SSHRC funding, a four- university partnership and a network of architects, designers, and midwives are working to mobilize crucial knowledge and understanding about design of birth environments – an architectural project of great import for womens' health and wellbeing. Through this review she brought forward the impact of blue light on melatonin, which is involved in triggering and sustaining labour, and thus potentially slowing or shutting it down. This important aspect of colour/light design for maternity care is not yet widely known.

Congratulations to **Marie Lannoo**, on the recent launch of her book [In Extremis](#).

Robin Kingsburgh published *The Colour Literacy Project: Revitalising colour education foundations* in the JAIC Special Issue on Contributions by the Colour Literacy Project team. She also presented workshops with ISCC President Maggie Maggio at the ISCC Conference *Color Impact: Color and Human Experience* at Rochester Institute of Technology.

2023 CRSC Board: **Robin Kingsburgh** (President), **Montaha Hidefi** (Vice President), **Venkat Venkataramanan** (Treasurer), **Judth Tinkl** (Secretary), **Doreen Balabanoff** (Past-President) and Members at Large: **Vivian Lo**, **Sara Hartland-Rowe**, **Lora Di Fabio** and **Emily Grundy**.

CHILE

ASOCIACIÓN CHILENA DEL COLOR



ASOCIACIÓN CHILENA DEL COLOR

ACC MEMBERS' NEWS

The Relationship between Colour and Sustainability

From June 2023 to February 2024, our member **Dr Ingrid Calvo Ivanovic** carried out a period as a Visiting Researcher at the Design Department of Politecnico di Milano, in Italy. The research focused on one of the challenges that colour means for design in the 21st century, which emerged from Ingrid's doctoral research (completed in March 2022): sustainability. Ingrid was investigating existing colour design practices that are generated through sustainable decisions, from different circular approaches: social, productive, technological, and cultural. With the above, she created a framework containing strategies and concrete actions to implement, called *Sustainable Color Design Strategies*. In addition, the framework was validated through interviews with colour design, sustainability and circular economy specialists from different countries. The results of her research will be published this year.

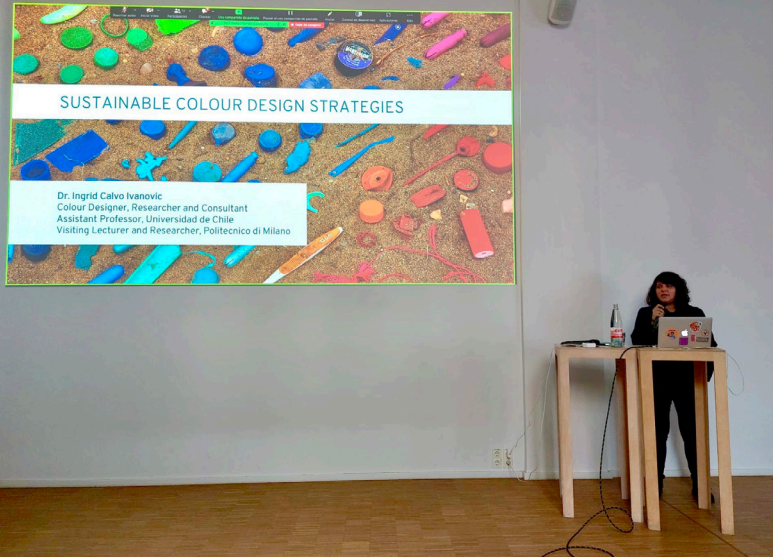
Additionally, in 2023, Ingrid presented three conferences about her colour research: in February, invited by the Colour Research Society of Canada; in May, invited by the Köln International School of Design, in Germany; and in June, invited by the FAUUSP, Universidade de Sao Paulo, in Brazil; and was interviewed about her colour expertise by the *Habitar Pensar* radio show in Chile in May, and by *La Repubblica* Italian newspaper, in August.

Sonic Visualisations of Barrio Yungay

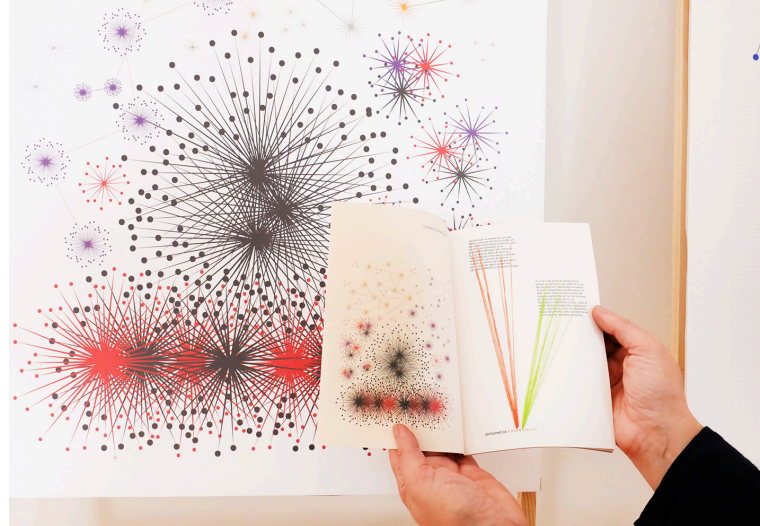
The project, directed by **Bernardita Brancoli** and **Paulina Riquelme** at the graphic design school of the Universidad Finis Terrae, seeks to establish a link between the discipline of design and the sound environment of the historic center of Santiago. The preliminary research aims to immerse students in the soundscape, identifying strategic points to highlight and catalogue the different auditory identities. Emphasis is placed on listening, locate, and recognize the natural or artificial origin of sound sources, and transform them into a new language through graphic composition tools such as colour and shapes. Through a synesthetic exercise, colour patterns were generated to represent diverse sounds. A small publication and a series of graphic visualizations were exhibited at the Sound Museum in Santiago, Chile.

Chromatism in Encounter: A Gaze Through Colour

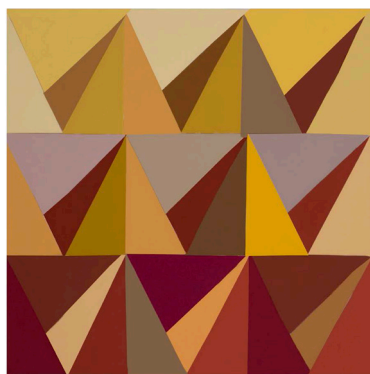
In the renovated market of Valparaíso, a heritage building becomes the stage for a unique exhibition of architect **Erich Birchmeier** that explores the relationship between colour and perception, (*ARTEPUERTO 2023*). The monochromatic space, with gray pillars, walls, and floor, is illuminated by natural light filtered through wide windows. The exhibition of paintings between the pillars creates a fascinating contrast between the grayish luminosity and the kaleidoscopic burst of colours. Colour becomes a point of admiration or a fleeting window into a world of nuances. The visual experience goes beyond individual artworks,



Dr. Ingrid Calvo Ivanovic presenting her research at KISD, Köln – Germany



Sound poster and publication showing the sonic units displayed (photo by Bruna Sotomayor).



Triangles in a grid of 9 squares in warm colors ("Juego Creativo" Book Illustration).



A typical Chilean flower (notro) measured by visual comparison (photo by Elisa Cordero-Jahr, 2023).

highlighting the dynamic interaction between space and artistic expression, challenging perception, and creating a unique connection between the viewer and the environment.

Colour and Creativity

The experience of more than 10 years conducting colour and creativity workshops, led us to verify that play as a method has great importance in the development of imagination, intuition, and inspiration. This work was translated into the book "Juego Creativo" ("Creative game", Editorial USM) written by **Bernardita Lagrèze** and **Cecilia Valenzuela**, whose launch took place on December 18, 2023 in Valparaíso, Chile. The almost 100-page text introduces topics such as colour and composition in a simple way, guiding you to the solution of 63 games. Colour is the great motivator, and the games use coloured paper in abstract shapes. It allows you to venture to discover, test and change in

a continuous search, achieving a better development of visual perception.

Color chart based on nature in southern Chile

Elisa Cordero-Jahr leads the interdisciplinary team of designers and scientists whose aim is to create a color chart with identity for the "Los Ríos" Region, Chile. This territory has more than 60 rivers and 11 lakes and is located between the Pacific Ocean and the Andes Mountains in the south of the country. The team collected atmospheric colors (skies, waters, and forests) and colors of objects such as rocks, sands, flowers, leaves and other vegetation. The colors were measured with an NCS colorimeter and also with visual comparison. The 300-colour chart is available in NCS, Munsell, RGB, CIELAB, CMYK and a Chilean paint company. The whole project will be published in May 2024, with an exhibition and a website.

CHINA

COLOR ASSOCIATION OF CHINA



Some speakers and attendees at 2023 symposium of “Color Science and Imaging Technology” by CAC, along with the COS annual conference, on 29-31 July 2023 in Wuhan Hubei.

ACTIVITIES IN 2023

The biennial symposium on the topic of “*Color Science and Imaging Technology*” was held on 29-31 July 2023 in Huazhong University of Science and Technology, Wuhan, Hubei, along with the annual conference of Chinese Optical Society (COS). Coming from the academic institutions and industries of Zhejiang University, Fudan University, Beijing Institute of Technology, Xi’an University of Technology, Yunnan Normal University, China University of Geosciences, Hangzhou Dianzi University, National Institute of Metrology, Institute of Optics and Electronics CAS, Kunming University of Science and Technology, Taiyuan University of Technology, Dalian Polytechnic University, Qilu University of Technology, Zhejiang A&F University, Wuhan Textile University, Wuchang University of Science and Technology, Binzhou

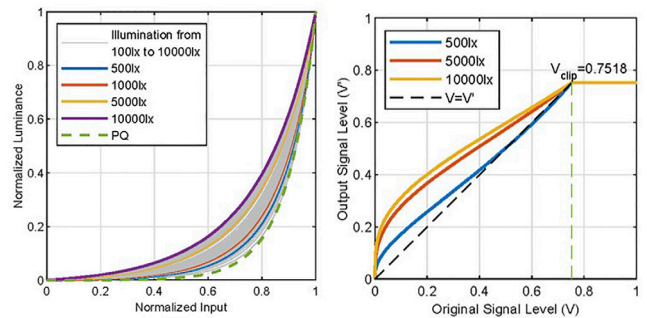
University, Huawei Technologies, Fuzhou Rockchips Electronics, etc., the participating experts and graduate students presented 32 technical reports at this symposium through oral and poster sessions with the sub-topics of Color Measurement and Reproduction, Spectral Imaging and Reconstruction, Image Color and Display, Color Vision and Evaluation. Via this professional platform, the Chinese color scientists, especially the young scholars, could share their related technical trends and recent achievements in the fields of color science and imaging technology.

On 21 March 2023, CAC published an elegant essay on our WeChat platform with the public account “*Wonderfulness of Color*” to celebrate the **International Color Day 2023**. The essay presents a long-time scale to introduce the



The lecturers at 14th Asian Color Forum in Keqiao, Zhejiang on 27 April 2023.

The new EOTF under different illumination, along with the three example enhancement operators as well as the visual results under 500lx, 1000lx, and 10000lx, respectively.



generation, development and applications of color and its perception, demonstrating the color attributes and versatility on biological, technological, cultural and artistic aspects.

The **14th Asian Color Forum** took place in Keqiao, Zhejiang on 27 April 2023. Ten invited speeches were presented by the experts from China, Korea, Japan, Malaysia, and Germany, respectively, with the topics of Chinese traditional colors, fashion color trends, creativity and color, color effect on mood and behavior, artistic and industrial fusion design, perception of color, symbolic fugue, and aesthetics of Chinese colors, and so on under the theme of “*Endless Exploration & Boundless Innovation*”.

On 18 November 2023 with the theme of “*Color trends inspire fashion creativity*”, the **Color Creativity Session** was held during the Global 2023 Apparel Conference in Humen, Guangdong. The scholars and designers from China, France, Japan, and Italy gave 5 keynote reports to discuss the combination of creative industries and the development direction of fashion.

At the **15th AIC Congress** in Chiang Rai, Thailand on 28 November - 2 December 2023, over twenty participants from China presented academic papers with the topics covering color, imaging, and lighting.

In light of the significant surge in the prevalence of high dynamic range (HDR) displays and the corresponding advancements in content delivery over recent years, a comprehensive investigation into enhancing the display of HDR images has been undertaken in Zhejiang University. This study specifically delved into addressing the challenges related to contrast and detail preservation in HDR images when viewed under diverse lighting conditions. Based on the contrast sensitivity of human visual system (HVS), the perceived luminance was quantified to optimize a new electro-optical transfer function (EOTF) matching the contrast perception under target illumination. The display enhancement operator was then constructed by treating the target as a transcoding problem between the new EOTF and the HDR display model. The proposed method is image contents independent and requires little time consumption, so it has the potential to be implemented for the video applications. Both psychophysical evaluation and physical measurement demonstrate that the proposed method outperforms the existing algorithms and could significantly improve the image quality in terms of naturalness, brightness, gradation, and preference in the bright environment. The results in this study would be a useful reference for display manufacturers, especially for smart-phone system makers.

CROATIA

HRVATSKA UDRUGA ZA BOJE

In 2023, the Croatian Color Society - HUBO (Croatian Color Society CroCoS) celebrated its 10th anniversary since its founding in 2013. In these 10 years, the Society faced numerous challenges to which it responded readily and successfully, and through the past, well-known turbulent times, remained faithful to its primary task: to justify the name of the Croatian Colour Society with its activities, and to create a platform for connecting professions that include color as one of its basic tools and for all color lovers throughout Croatia, to cooperate with educational and scientific institutions, chambers, trade organizations, and other bodies and organizations dealing with the field of color.

In addition to the active participation on Croatian Colour Society activities, the members of the Society are highly active and successful in their scientific-research, artistic and professional activities, and through the Society they achieve the connection of professions that include color as one of the key aspects of their activities and the exchange of information about scientific, professional and artistic achievements and novelties within the STEM and STEAM fields. Members of the Society regularly participate in international congresses organized by the AIC, as well as national groups of colorists who are members of the AIC association, not only through scientific activity and presentation of their scientific achievements in the field of color, but also as members of scientific committees. This year, members of the Society, prof. **Ph.D. Martina**



Glogar and **Marijana Tkalec**, mag. technical engineer text., participated in the international congress in the organization of the Italian national colour association Gruppo del Colore, a member of the AIC association.



Marijana Tkalec participating with the oral presentation on XVIII Color Conference organized by Gruppo del Colore Associazione Italiana Colore

Also, members of the association prof. **Ph.D. Ana Sutlović** and **Prof. Ph.D. Martina Glogar** participated in a three-day workshop organized within the framework of the international art project "All the colors of Montenegro" in Šavnik, Montenegro.

Member of the Association assoc. **dr. art. Ivana Bakal**, participated in two large international exhibitions BIER23 (Kranj, Slovenia) and Femina - vs. Feminology

Natural dyeing workshop held by professor Ana Sutlovic, University of Zagreb Faculty of Textile Technology, as part of the event International Color Day



(Skopje, Macedonia), realized two independent exhibitions, created three costume designs and exhibited at 5 collective thematic juried exhibitions in the country. She published the author's book Ivana Bakal - *Poetics of Visual Theater*, which has just been published.

A member of the Society, independent artist, painter **Snježana Božić**, in the past year has been carrying out a series of artistic activities, some of which are an independent exhibition of paintings and autochthonous Easter eggs, entitled "*Spiritual and physical beauty*", in the Stepinac Gallery, Blessed Alojzije Stepinac Parish in Koprivnica, and exhibitions autochthonous Easter eggs (Slovak tradition, with elements of Croatian plaiting, Glagolitic script), in Matica Slovacka in Zagreb, Gallery Krapina, Djurdjevac and Lipik. She participated in two international art colonies in Hungary and several in Croatia. The sculpture "*Holy Family*" was exhibited at the exhibition in the Museum of the City of Djurdjevac.

One of the Society most prominent activities is certainly the annual celebration of the International Colour Day, which has been celebrated in the world since 2008, and in Croatia since 2014. The Croatian Color Society, by organizing the celebration of the International Colour Day, provides an opportunity for both renowned as well as young, still unrecognized scientists to present their ideas, artists and stakeholders of various professions, to present themselves to the public through a lecture or exhibition, and to connect

research, professional and artistic circles that might not otherwise spontaneously connect.

In co-organization with the University of Zagreb Faculty of Textile Technology, Faculty of Graphic Arts, Faculty of Architecture and Academy of Fine Arts, the Croatian Color Society (CroCoS) celebrated the International Color Day 2023 for the 10th time. Although the International Colour Day is traditionally celebrated on the first day of spring, March 21, this year the exhibition was held for three days, from March 30 to April 1, 2023, in the Nikola Tesla Technical Museum, Zagreb, which the Croatian Association for Colors owes deep gratitude for providing selfless support for all 10 years of activity of the Society. Exhibition dedicated to color, entitled "*Color in the picture*" united, as always, the works of creatives and professionals of groups of all ages.

With their independent exhibition, on the event the following artists participated: Koraljka Kovac Dugandzic with the exhibition "*From the cycle Inner Spaces*", Marinko Sovar with the textile installation exhibition "*Joy*", Sanja Jakupec mag. ing. des. text. with textile exhibition "*I'm happy*" and Marijana Tkalec, with the exhibition "*Blue*", all from the University of Zagreb Faculty of Textile Technology. Besides artists mentioned, also participated academic painter Danko Friscic with exhibition from the University of Zagreb Academy of Fine Arts; Vilko Ziljak and Vanda Jurkovic with exhibition "*Color in contemporary computer graphics*" from the University of Zagreb Faculty of Graphics, academic painter Nada

CROATIA

HRVATSKA UDRUGA ZA BOJE

Ziljak with exhibition “*Color in the picture, Infrared art*” and independent artists Snjezana Bozic with exhibition “*Blue painted blue*” and Krunoslava Kuljis with exhibition “*Color in silk*”.

Artist and costume designer **Ivana Bakal** showed the video exhibition “*Visual theater 02, life changes*” and **Djurdjica Kocijancic**, also from the University of Zagreb, Faculty of Textile Technology, held the performance “*Red and Blue Medieval Lady*”.

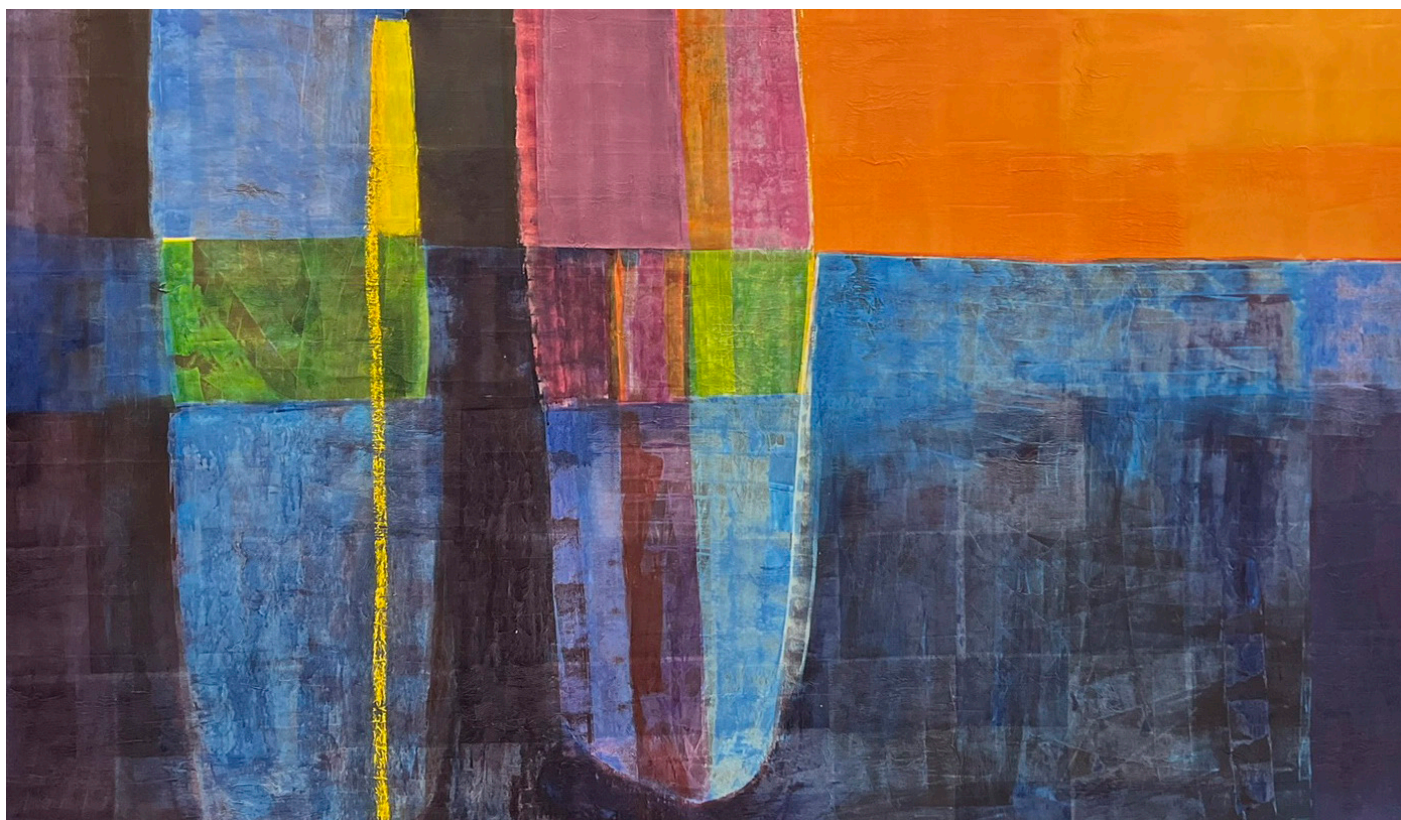
Students of the University of Zagreb Faculty of Graphic Arts presented themselves with the exhibition “*Codes in Color*” under the mentorship of professors **Ivane Ziljak Stanimirovic** and **Marko Maricevic**; students of the University of Zagreb Academy of Fine Arts present the exhibition “*Slikoboj*” under the mentorship of professor **Danko Friscic**, an academic painter, and **Ivana Bakal** and **Đurđica Kocijancic**, mentored the exhibition of works “*Applied costume design*” of Costume Design students (II. year of the Textile and fashion design graduate study), course Applied Costume Design II, attended by Sara Bardic, Teodora Cerovac, Sofija Curis, Josip Djerek, Ema Markovic-Imbrija, Ana Roko from the University of Zagreb, Faculty of Textile Technology. **Suzana Kutnjak-Mravlincic** mentored the exhibition “*TTF shuze*” of students of the undergraduate professional study Shoe Design University of Zagreb Faculty of Textile Technology, through which she shows the successful cooperation of the Faculty of Textile Technology with the footwear factories; Ivancica, MIDAL, Production PG and LORENZ Shoe Group.

The students of the University of Zagreb Faculty of Textile Technology - Ana ROKO present themselves in independent exhibitions with the exhibition of works “*Laboratorio della moda*”, created as part of the Erasmus project 2022/2023, course Laboratorio della moda, mentors: **Raphael Edem KOUTO** and **Francesca CAVERZAN**, IUAV - Venice, Italy 2022; Tena Omerovic with an exhibition of graduate theses “*SYNESTHESIA: The Art of Perception*” and students of the Textile and Fashion Design graduate study, Samanta Petrusa “*Awakening*”, Vedrana Pecek “*Organic geometry*”, Dorotea Belajec “*Candy*”, Ela Leko “*Segmenti II*”, Leo Subanovic “*Generational Beehive*”, Nikolina Krsticevic “*Dlakavica*”, Ivana Furundjija “*Thought of Another*”, Sara Strgacic “*U Moru*”, Josipa Marjancevic “*Moody Times*”, Franka Iskra “*Tapestry*”. Jana Friscic, a 1st year graduate student in Textile and Fashion Design majoring in Costume Design, presents the exhibition “*I don't know*”.

A video exhibition of photo-essays was presented by students of the University of Zagreb Faculty of Graphic Arts, under the mentorship of professor **Maja Strgar Kurecic**.

The students of the School of Fashion and Design, Zagreb, from the courses Tailors and Textile Chemical Technicians “*From color to cut - Croatian Amazon*” under the mentorship of professors **Marija Gašperov** and **Tatjana Novak**, and “*Picasso*” from the 3rd grade student Valentina Suša presented their exhibitions. mentored by professor **Tatjana Novak**.

This year, the students of the Ladimirevci Children's Village “*Colourfull Village*”, Valpovo, are also participating



Academic painter Koraljka Kovac artwork

in the exhibition, and among the youngest, the students of the 4th grade of the Pantovcak Elementary School are also participating with the exhibition of art works “*Pantaci*” under the guidance of class teacher **Borna Prpic Sovilj**. Also the students of the Julije Klovic Elementary School participated with an exhibition of art works “*Color in the picture - pastel and watercolor*” and “*Color in the picture - Pencil and wooden crayons (proportions, frame, color-non-color relationship, the appearance of three-dimensionality on the surface)*”.

5th grade student Ivan Alexander Glusic from Primary School Matija Vlacic from Labin participates in the solo exhibition “*Light in Passing - Diptych*”, under the mentorship of **Professor Narcisa-Adalgisa Skopac**.

The users of “*Ozana*”, an association for social and humanitarian work with people with intellectual disabilities, who traditionally take part in the event every year, in addition to the exhibition of paintings made of wool, also held a workshop on weaving wool

and creating an art composition from the resulting wool. In the workshop, as part of the program of social-humanitarian inclusive work, the students of the high school 15th Gymnasiums from Zagreb also participated.

An exhibition of children’s works created as part of the art competition held on the occasion of the 10th anniversary of the STEAM workshop COLORINA under the leadership of prof. **Ana Sutlovic**, and on the occasion of the opening of the exhibition, prizes were awarded for the first, second and third in the category of artistic design of the mascot and logo of the COLORINA workshop.

This year, too, the Croatian Color Society, in cooperation with the academic institutions that are members of the University of Zagreb, created a presentation of the completeness and omnipresence of color and the imbuing of color in all aspects of artistic and creative activity and human general living and existence.

FINLAND

SUOMEN VÄRIYHDISTYS SVY RY



SUOMEN VÄRIYHDISTYS



Prof. Markku Hauta-Kasari receiving the SVY Iiris Prize 2023 for his seminal contribution on colour research and teaching.

INTERNATIONAL COLOUR DAY

The Finnish Colour Association celebrated the International Colour Day on the 21st of March by awarding the Association's Iiris Prize to **Prof. Markku Hauta-Kasari** for his influential work in computational colour science. Prof. Hauta-Kasari is based at the University of Eastern Finland in Joensuu. Throughout his career, he has employed photonics and computer science in projects spanning various applications of spectral imaging, such as on spectrally tuneable light sources and fundus imaging. In addition to being involved in numerous large research projects with universities and industry, he has made his mark in undergraduate and graduate teaching in computer science at the University of Joensuu, notably in the Erasmus Mundus master's program Computational Colour and Spectral Imaging (COSI). Prof. Hauta-Kasari is currently involved in projects funded by the Academy of Finland on biocolours and spectral fundus imaging.



Panel discussion in the Iris seminar organized in the House of Sciences and Letters on 30.11.2023. From left to right, Valter Arstila, Markku Hauta-Kasari, Harald Arnkil and Maria Olkkonen.

EXCURSION

FCA organized a visit to the new basic exhibition at Ateneum (Finnish National Gallery) on 14.6.2023. The visit was guided by **Veera Hakomäki**, who gave the members a tour on the exhibition architecture and colour scheme.

IIRIS SEMINAR

The association organized the traditional Iris seminar on 30.11.2023 in the House of Sciences and Letters in downtown Helsinki. The seminar was organized in a hybrid fashion with 18 participants at the venue and 50 participants watching the seminar remotely. The topic of the seminar was 'What does science know about colour?' and the goal was to elucidate how different branches of science approach colour research. The first speaker, **Professor Valter Arstila** from the Department of theoretical philosophy, University of Turku, gave a presentation titled 'What we speak about when we speak about colour?'. The second speaker, **Dr. Maria Olkkonen** from the Department of Psychology, University of Helsinki spoke about the mechanisms of colour perception. The third talk was a keynote given by the Iris prize recipient, **Professor Markku**

Hauta-Kasari from the University of Eastern Finland with the topic 'Applications of colour research based on spectra'. The evening was rounded out with a lively panel discussion moderated by **Harald Arnkil** and a lovely seminar dinner.

The seminar is available in Finnish via the following link: <https://www.youtube.com/watch?v=jfKYgM0zN8s>

INTERNATIONAL ACTIVITY

Harald Arnkil continues on his fourth year in the project team for the *Colour Literacy Project (CLP)*, focusing especially on developing information and resources for university-level colour teaching. The goal of the CLP is a web portal through which one can reach up-to-date and peer reviewed information and teaching material on colour (<https://colourliteracy.org>). CLP has organized four virtual events per year. FCA members were featured in two seminars in 2023: **Noora Yau** gave a presentation in the March seminar *Colour & materials: Past, Present, Future* (<https://colourliteracy.org/forum4>) and **Maria Olkkonen** gave a presentation at the Colour & the Perceiver seminar in June (<https://colourliteracy.org/colour-the-perceiver>.)

FRANCE

CENTRE FRANÇAIS DE LA COULEUR



During 2023, the individual activity of several artists members was very intense. **Larissa Noury** gave a talk on Art & haute-Couture with a small exhibition of some of her paintings. She also was the CFC correspondent for the AIC 2023 General Assembly in Thailand. **Caroline Besse** managed an exhibition of her works realized with ground minerals inside the Mineralogy collection at the university of Jussieu, in Paris.

Patrick Callet and **Laurence Tardy** organized a presentation session on color for children aged 6 to 8 years old, in an elementary school in Haute-Loire. Fundamental observations and a few small experiments reproducible by the children were on the program.

Our Doyenne, **Jacqueline Carron** (born in 1920), offered copies of her book to young poster authors at the conference. **Valérie Bonnardel** also participated in this award ceremony.

The television channel France5 produced a very interesting report “*Health Survey*”, dedicated to old age and in which **Jacqueline Carron**, participated. Broadcast in December 2023, available as a podcast. Exhibition of works at the Arte Coloris gallery, Bordeaux, organized by the “Académie de la Couleur”.

Half-day on “*Metal and its modes of appearance*” co-organized with the GDR-CNRS Appamat. Participation of 2 members of the CFC, **Laurence Tardy** and **Etienne Trouvers**, on “*Metal rendering with or without metal in painting*” in Paris then during the study day “*Imaging works of art*” in Poitiers. “*Reproduction of the nuances and spatiality of a painting or a drawing*”, was another theme of intervention by **Laurence Tardy** (secretary of the CFC). The internal “*Color, Ethics and Digital Restoration*” Commission has developed several richly documented texts concerning works already restored or in the process of being restored which raise questions for us.



The audience and artists at the evening "Chromatic variations".

At the Communication level, a monthly Newsletter was produced by **Kevin Bideaux** who published a book from his PhD work: "Rose", une couleur aux prises avec le genre. He also had a Presentation and a paper at the Gruppo del Colore conference, Milan, September 2023

Issue 177 of the Primaires magazine, dedicated to the notion of harmony, was published after a long absence of 7 years. It is still available.

At the end of the year, an homage to one of our historical members, **France Lavergne-Cler** was given with a Piano and Violin recital "Chromatic variations". The pianist **Frédéric Lagarde** and the violonist **Pierre-Qlivier Queyras** commented the the selected works they proposed. Some of his watercolors were exhibited for this evening gathering her friends and CFC members (about 60 participants).

In 2024 CFC will more actively participate in the GDR-CNRS Appamat, co-organizing a study day on Varnishes (optical properties, use in art in industry, history, ageing, properties measurements, etc.). Some commented visits are planned and a new Chromatic set of events involving music and Color are on study.



The children and the demonstration set on optical fusion (the very old Polyton system while always very efficient)

GERMANY

- DEUTSCHE FARBWISSENSCHAFTLICHE GESELLSCHAFT (DFWG)
- DEUTSCHES FARBENZENTRUM (DFZ)
- DIN-FNF (DIN)

DEUTSCHE FARBWISSENSCHAFTLICHE GESELLSCHAFT (DFWG) - GERMAN SOCIETY OF COLOR SCIENCE AND APPLICATION

The **DfwG Annual Meeting 2023** took place on October 5th and 6th, 2023 at the Fraunhofer Institute for Applied Polymer Research (IAP) in Potsdam. This department deals, among other things, with the technology development of nanomaterials and quantum dots. Quantum dots are a new class of nanomaterials in which the absorption and emission properties can be uniquely adjusted via the particle size. New materials and synthesis processes are being tested for QD-LED and colour filter applications as well as for solar technology. During a tour of the institute's laboratory and exhibition rooms, it was possible to take a look behind the scenes of this fascinating technology and areas of application.



Participants of the DfwG-Conference 2023 in Potsdam



42 participants from Germany and Switzerland were there in Potsdam and experienced an exciting program with sixteen lectures. The focus of the conference program was the quality of light in lighting technology, colour and appearance measurement as well as colour generation and colour perception. There were also reports about colour in nature and culture. A special highlight was the workshop on the topic of high dynamic range (HDR) images - from capture to output as part of the meeting of the colour image processing working group. The basics were taught and the recording of HDR images with cameras, the display of different HDR image formats, software applications for adjusting gamma and graphic format conversion, as well as light and colour measurement were demonstrated.

With the DfwG funding award the doctor's thesis of **Dr. Adrian Eissfeldt** and **Elisabeth Kemmler's** master's thesis were honoured.

The next annual conference will take place on October 9th and 10th, 2024 in Göppingen. The 50th anniversary of the founding of the DfwG will be celebrated there.

DEUTSCHES FARBENZENTRUM (DFZ) GERMAN COLOUR ASSOCIATION

The development workshop and the general meeting at the Fachschule Farbtechnik at the end of September 2023 in Hamburg, Germany were very successful! The German Colour Association was able to reorganize



Great interest of the participants in the HDR Imaging workshop



DFZ-Workshop at Fachschule Farbtechnik Hamburg

the Board of Trustees. **Dr. Alexandra Loske** (Colour Theory and Colour Literature), **Prof. Christiane Sauer** (Colour and Material) and **Artist Tomislav Topic** (Colour and Contemporary Art), **Ulrich Seiss** (Colour and Craftsmanship), **Nathalie Pagels** (Colour and Ethics), **Prof. Esther Hagenlocher** (Colour and Architecture), **Prof. Dr. Axel Buether** (Colour Psychology and Colour Perception), **Prof. Dr. Christoph Wagner** (Art and Cultural History), **Prof. Dr. Olaf Müller** (Philosophy of Science) and **Prof. Dr. Johannes Grebe-Ellis** (Colour and Natural Science) make up the new Board of Trustees and keep the members of the German Colour Association up-to-date in their professional fields.

The DFZ has appointed its long-standing members **Prof. Dr. Marieluise Schaum** and **PD Eckhard Bendin** as honorary chairmen. Both have contributed significantly to the identity of the DFZ over many years.

Lively discussions on the topic of “*Colour and the City*” promise an exciting conference in the fields between human living and the scale of the city, the city and the countryside, planning and improvisation.

The 2024 conference will take place on September 27th and 28th 2024 under the title **STADT LAND FARBE** at the Fachschule Farbtechnik in Hamburg.

The conference will focus on the search for strategies for the colourful and sustainable design of our build environment. www.deutsches-farbenzentrum.de

DIN – FNF

In 2023 the following new standards have been published:

DIN EN ISO 18314-2: 2023-03, “Analytical colorimetry - Part 2: Saunderson correction, solutions of the Kubelka-Munk equation, tinting strength, depth of shade, hiding power (ISO 18314-2:2023); German version EN ISO 18314-2:2023”

DIN EN ISO 18314-3: 2023-02, “Analytical colorimetry - Part 3: Special indices (ISO 18314-3:2022); German version EN ISO 18314-3:2022”

DIN EN ISO 4618: 2023-05, “Colorimetry - Part 5: CIE 1976 $L^*u^*v^*$ colour space and u', v' uniform chromaticity scale diagram (ISO/CIE DIS 11664-5:2023); German and English version prEN ISO/CIE 11664-5:2023”

For details about the work of DIN-FNF please see: <https://www.din.de/en/getting-involved/standards-committees/fnf>

GREAT BRITAIN

THE COLOUR GROUP (GREAT BRITAIN)



The Colour Group (GB) eased into the new year with the ever-popular traditional one-day January Colour Vision Meeting. It marked the return to the usual pattern of participation in person. As usual an array of international and British speakers presented on the day. The 2023 Palmer Lecture A Journey Through Colour Space was presented by **Professor Sophie Wuerger** from the University of Liverpool, UK.

In February the customary session of **Colour in the Clinic** took place online, continuing the discussions on the science of colour vision and its application to visual disorders. The meeting was hosted by the Eye Department of St Thomas' Hospital and sponsored by the Colour Group (GB) and the UK Neuro-Ophthalmology Society.

On the afternoon of 21st March 2023 members and friends of the Colour Group (GB) gathered at a hybrid collaborative meeting to celebrate International Colour Day. It was held at the University of the West of England, Bower Ashton Campus, Bristol, and in collaboration with the Colour Group (GB). Established and emerging researchers on various aspects of colour presented works on a considerable array of topics; from iridescence and prints of Madame Yvonde to printing with liquid crystals, materiality of colour and paint naming in domestic paint catalogues.

Every two years the Colour Group (GB) awards a sterling silver Turner Medal, honouring Britain's greatest colourist, to a distinguished colour worker in the arts or humanities. The occasion is marked by the annual Turner Lecture. In May 2023 the medal was presented to **Dr Barbara Flückiger**, University of Zurich, Switzerland. She has made enormous contributions to the field of colour in film, through her research, archival and conservation work. Dr Flückiger spoke on the theme of The Material Aesthetics of Len Lye's Experimental Colour Films examining the technical and physical properties of the colour processes he used in order to bring an understanding as to how the materiality of his films shaped their aesthetics.

After the summer, the Colour Group (GB) staged yet another collaborative meeting, this time reaching out to Scotland. At the beginning of October, in collaboration with the University of Edinburgh, designers, makers, researchers and educators working on aspects of architecture and the built environment were given an opportunity to discuss Colour in Architecture. Participants explored the colours of Edinburgh and viewed some of the mosaic fragments in the University of Edinburgh Heritage Collections.

The well-attended Awards Meeting at the beginning of November honoured this year's recipients of the



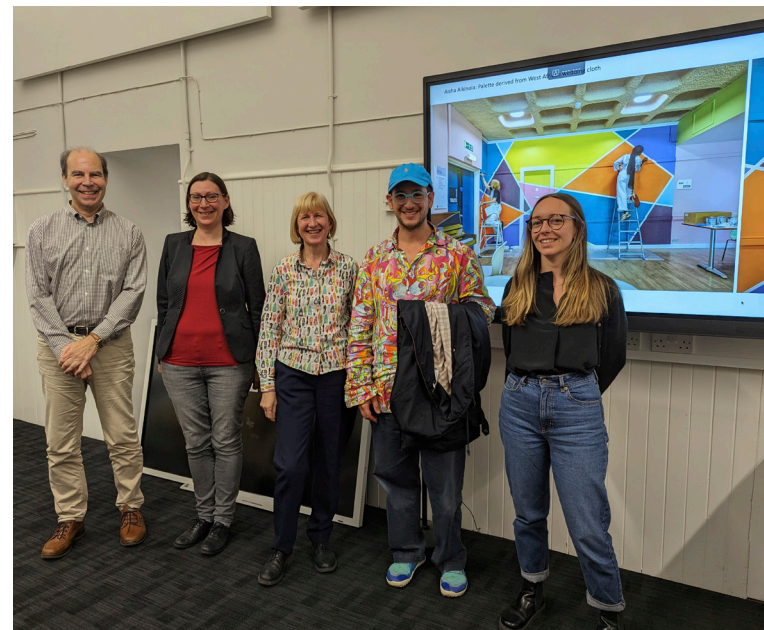
Carinna Parraman's Presentation on historical colour charts



The Organisers of the Seventh International Conference Colour in Film 2023

Colour Group (GB) sponsored International Colour Vision Society (ICVS) Summer School Studentships, WD Wright Travel and Robert WG Hunt Poster Awards.

In December the 2023 public activities of the Colour Group (GB) were concluded by the seventh edition of the International Conference on Colour in Film. It was delivered in collaboration with the National Film Archive of Austria at their Metro Kinokulturhaus premises in Vienna. The conference's theme was colour and underwater cinematography, focusing on the pioneering work of Hans and Lotte Hass, as well as Hans Fricke. As is customary, the conference



Speakers of the Colour in Architecture Design, Making, Thinking, Teaching

programme included scholarly presentations and curated screenings from early films to more recent documentaries as well as shining a light on technical issues such as early film light sources and projection technologies. A special feature of this year's meeting was the consideration of the effects that various types of pollution have on the seas and marine life.

As always, looking forward, the Group will aim to continue the propagation of interest in and knowledge of all aspects of colour as well as its support of emerging talent in 2024.

ITALY

GRUPPO DEL COLORE –
ASSOCIAZIONE ITALIANA COLORE



The present Report covers the activities of the Color Group–Italian Color Association (GdC) (www.gruppodelcolore.org) in 2023 and the program guidelines for 2024.

The ‘Color Conference’, organized annually by the Gruppo del Colore – Associazione Italiana Colore, has reached its 18th edition in 2023 and was held at Milan Polytechnic branch of Lecco. This two-day international event featured three invited speakers – **Andrew Stockman**, **Christopher Bauder**, and **Raimondo Schettini** – and the presentation of 70 papers. The volumes published in December 2023 in open access – one with 29 papers in Italian and the other with 34 in English – collect the papers presented on September 15th and 16th. The “Color Award/Premio Colore”, given every year at the conference, was awarded in 2023 to **Gaetano Pesce**. We are thankful to the Color Committee – in the persons of Alice Plutino, Eva Mariasole Angelin and Miguel Ángel Herrero Cortell – for their valuable contribution and to Renata Pompas for memorably introducing Pesce at the conference. Andrea Siniscalco, chair of the Conference, was supported and helped by many collaborators. We would like to extend special thanks to all those who were involved for the great work done and the successful realization of the event. Some of the colleagues who participated are members of foreign colour associations that collaborated with our conference, such as Associação Portuguesa da Cor (Portugal), Colour Group (Great Britain), Forum Farge (Norway), pro colore (Switzerland) and Swedish

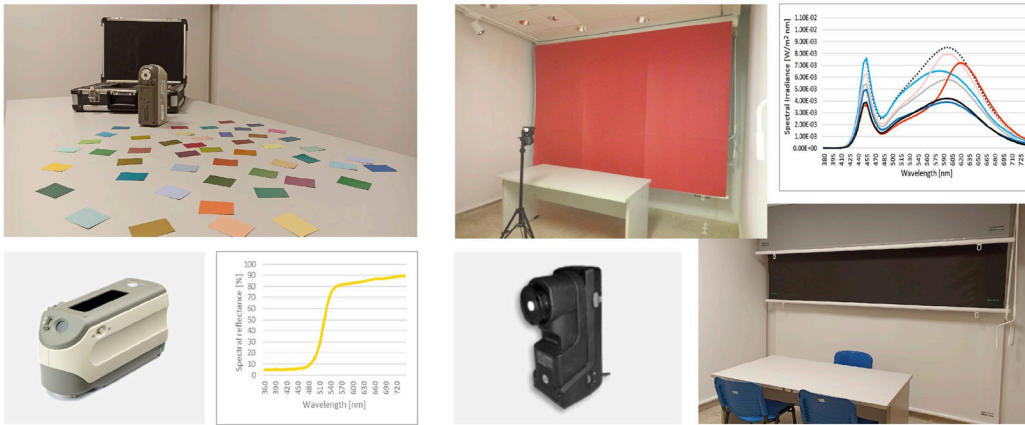
Colour Centre Foundation (Sweden). Their support is due thanks. The program, the book of abstracts and the proceedings can be downloaded at the following link: <https://www.gruppodelcolore.org/portfolio-articoli/lecco-2023/>.

On November 10th a study day “Color, light, vision: a multidisciplinary approach to the study of color” was organized by our member Prof. Alessandro Rizzi in collaboration with BICF and the University of Milan. It was dedicated to the late Mauro Boscarol and attended by 14 speakers.

In addition, the Gruppo del Colore granted patronage to 2 exhibitions: SYNTHÈSE VISUELLE by Monica Gorini held from April 27th to May 27th in Milan, and ANIMA MUNDI by Milagrosa Ortiz Martín which was inaugurated on September 8th in Gravedona ed Uniti sul Lago di Como.



Valan, ‘Color In All Senses’ at MUBA-Children Museum



Bellia, Spectral reflectance measurements of color samples & spectral irradiance measurements in a room with different wall colors



GdC – Color Conference Staff 2023

As regards the activities of our members, we would like to mention those of Francesca Valan (Francesca Valan Studio) and Prof. Laura Bellia. Valan was involved in industrial design projects, curated exhibitions dedicated to color and designed exhibition itineraries for color education such as the educational itinerary for the Van Gogh exhibition in Rome (October 2022 – May 2023), 'Red In Italy' exhibition in Rome, 'We eat the same colors' in Mexico City (March 2023), 'Color In All Senses' at MUBA-Children Museum (October 2023 – December 2024). Her studio organized also two workshops at Rubelli's showroom in Milan dedicated to color design of retail spaces for their most important customers such as Valentino, Dolce Gabbana, Pomellato. Bellia leads the Research Group in Lighting of the Department of Industrial Engineering of the University of Naples Federico II, which performs research activities about colorimetric measurements in cultural heritage applications to evaluate possible damages on works of art; and use of colours in interior design and, specifically, non-visual effects on humans due to interactions between light

and materials. Obtained results of all these activities have been presented in our Color Conference and published in international journals.

Besides, we are very happy to announce that in 2023 the association's journal 'Cultura e Scienza del Colore - Colour Culture and Science' (CCSJ) fulfilled the requirements to be indexed in Scopus and to be an OASPA member.

Finally, our association is going to organize two international events in 2024: the **19th Color Conference**, which will be held online (28-29 November, provisional date; <https://www.gruppodelcolore.org/call-for-papers-e-istruzioni-per-gli-autori/?lang=en>) and the 3rd Conference on **Colour Photography And Film: Analysis, Preservation, And Conservation Of Analogue And Digital Materials** (Amsterdam 12-13 September; <https://www.gruppodelcolore.org/call-for-papers-e-istruzioni-per-gli-autori-2/?lang=en>). We are thrilled to announce that the invited speakers for the online Color Conference 2024 are **Jo Campana, Vien Cheung** and **Phil Green**. We kindly invite authors to submit their papers to participate in both our conferences.

JAPAN

COLOR SCIENCE ASSOCIATION OF JAPAN



日本色彩学会
THE COLOR SCIENCE ASSOCIATION OF JAPAN



Entrance of Annual Meeting 2023 venue

THE 54TH ANNUAL MEETING 2023

The 54th Annual Meeting of the Color Science Association of Japan (CSAJ) was held hybrid of face-to-face and online on 24-25 June by Ms. AWANO Yumi (Tokyo Zokei University). More than 208 participants attended, and 62 contributed papers were presented. Two invited lectures were “Color reproduction on physical surface in projection mapping” by Dr. IWAI Daisuke (Osaka University) and “*Spinning the Nebuta Culture: From the Site of the Aomori Nebuta Festival as a Japan’s Fire Festival*” by Mr. CHIBA Sakuryu (The 5th Nebuta Master). The CSAJ Presentation Encouraging Awards were given to five students: Mr. IIZUKA Tatsuya (Kitasato University), Ms. USHIJIMA Atsumi (Kyushu Institute of Technology), Ms. ZHANG Yan (The University of Tokyo), and Mr. HANADA Ikuto (Tokyo Institute of Technology).



Some participants in Annual Meeting 2023

THE STUDY GROUP MEETING 2023 AUTUMN

The Study Group Meeting 2023 Autumn was held online on 28–29 October, chaired by Dr. SAKAI Hideki (Osaka Metropolitan University). More than 104 people attended, and 19 contributed papers were presented. The invited lecture was “*Prospects for Color Scheme Design: Futures from the Intersection of CG and Generative AI*” by Dr. KITA Naoki (Tokyo University of Agriculture and Technology). The CSAJ Presentation Encouraging Award was given to Mr. AKETAGAWA Kosei (Chiba University).

AWARDS

The 15th CSAJ Best Paper Award was given to Dr. TOMINAGA Shoji (Norwegian University of Science and Technology / Nagano University) and Dr. GUANERA Giuseppe Claudio (Norwegian University of Science and Technology / University of York) for “*Appearance synthesis of fluorescent objects with mutual illumination effects*”, *Color Research and Application*, Vol.47, No.3, 615–629, 2022. The 26th CSAJ Award was given to Dr. OHNO Haruyo, for significant research achievements in color science and outstanding contributions to the Color Science Society of Japan. Also, the 3rd CSAJ Distinguished Service Award was given to Mr. OHSUMI

Masayuki, Me. NATORI Kazuyuki and Dr. MANABE Yoshitsugu. The 3rd CSAJ Distinguished Reviewer Award was given to Mr. NATORI Kazuyuki. In addition, The 1st Supporting Member Distinguished Service Award was given to Konica Minolta Inc., Evers Corporation, Dainichiseika Color & Chemicals Mfg. Co., Ltd., Japan Color Enterprise Co., Ltd., Nippon Denshoku Industries Co., Ltd. And and Kyokko Trading Co., Ltd.

PUBLICATIONS

Bulletin of the Color Science Association of Japan (Vol.2, No.1 - 4) were published in electronic media. In addition, *Color Science Research* (Vol.1, No.1) including 4 papers was published electronically.

UPCOMING MEETING

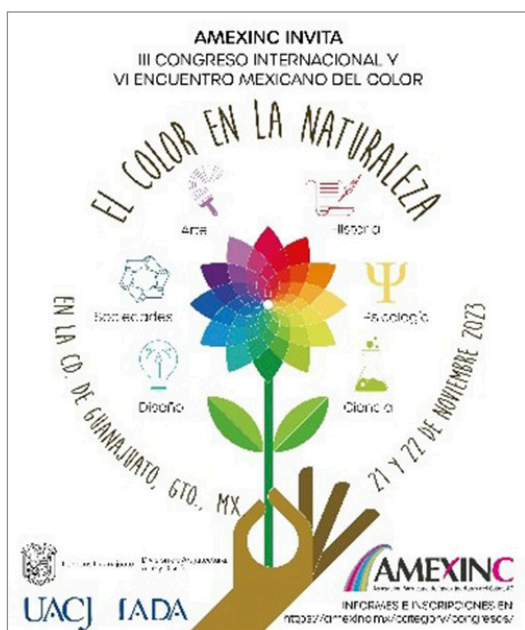
The 55th Annual meeting of the CSAJ will be held hybrid on 29-30 June 2024 at Kyushu University.

LOCAL CHAPTERS

Three local chapters in the Kanto, Tokai and Kansai areas worked actively and organized several meetings throughout the year. Currently, CSAJ has 1,052 members.

MEXICO

ASOCIACIÓN MEXICANA DE
INVESTIGADORES DEL COLOR, AMEXINC



Poster of the congress

The Mexican Association of Color Investigators (AMEXINC), has dedicated much of its efforts in generating a campaign from its website for the general public, mostly academics and educational institutions, with the aim of awakening interest in color studies. That is why it is participating with other associations in Latin America where they share the concerns and research progress of each of those present with the aim of generating collaborative networks and form the Latin American Color Group (GLAC).

On this occasion it was time to present the activities carried out in AMEXINC and the modifications

to the website to offer spaces for dissemination to members. As part of the work done, a proposal was made to generate a dossier with the participation of all the members writing an article of divulgation in which an urban photograph of “the colors of your city” is analyzed. In these meetings we also presented the call and the structure of our **III International Congress and VI Mexican Meeting of Color of AMEXINC A.C.**, which had as theme “*The color in nature*”.

The congress was held during two days in November 2023, in a hybrid manner from the Universidad de Guanajuato, in the city of Guanajuato, Gto., Mexico, more than 30 extremely interesting abstracts were received from which 21 national and international papers were selected. There were 16 researchers from Mexico, two researchers from Spain, two researchers from Colombia, one researcher from Switzerland and one researcher from Argentina.

As you can see in the program, we had very interesting themes, all directed to the general theme of color in nature, so each researcher was able to share their progress and findings with the rest of the attendees. To cite some examples, there was the participation of **Pia López-Izquierdo** from Spain, who spoke about the “enactive” concepts of color in architecture and support the idea that, with the use of color, people’s behavior can be changed, in the same way, color influences the human body at an emotional and communicative level, especially in architectural spaces. Other lines of

research coincided with this theme, such as the one presented by **Hilda Castro** and **Ivette Alvarado** from the Universidad Autónoma de Cd. Juárez, **Margarita Lagarde** from the UNAM in Mexico and **Monica Cuvelier**, who takes all these premises to apply them to the study of color in neuro design or neuro interior design. Because the subject of color in nature is so broad, there were presentations where the color of food was analyzed by **PhD. David Rincón** from the Universidad de Guanajuato, the importance of color in communication by **Ruth Barranco** from Spain, color in cultures by **Claudia Méndez**, **María Pier** and **Gabriela Arroyo** from Mexico, among others.

The two master conferences were in charge of **Orietta Polifroni** together with **Elda Cecilia Ramirez** from the Universidad Autónoma del Caribe in Colombia, where they tell all the experience they have lived of color, how they carry their methodology based on color from all aspects, how color can be a detonator of creativity and a spiritual connection and with other people. And the second one was in charge of **PhD. Silvia Lomascolo** where she gives an answer to her research question about the evolutionary reason for the color of flowers and animals, the role and the signals given by the different shades of colors in nature.

During this congress, **PhD. Georgina Ortiz**, editor of AMEXINC and **Monica Cuvelier** president of AMEXINC, presented the book called “*Sex Color and Eroticism*” published by the AMEXINC editorial that will be released in 2024, which contains the extensive documents product of the congress that took place in November 2021.

EL COLOR EN LA NATURALEZA

Martes 21 de Noviembre

Inauguración 10:00 - 10:20	10:00	
	10:20	Ruth Barranco Raimundo España 10:20 - 10:40 La cromática natural de la vida: la intervención en los paritorios del Hospital Universitario Clínico Lozano Blesa de Zaragoza.
Verena M. Schindler Suiza 10:40 - 11:00 La cultura Kawésqar: convivencia con la naturaleza. los colores y sus asociaciones.	10:40	
	11:00	Dora Alvarez Tamayo México 11:00 - 11:20 ¿Me da un refresco sabor rojo?: implicaciones pragmáticas de la significación del color en la formación de imágenes mentales globales.
Georgina Ortiz Hernández México 11:20 - 11:40 Variables que influyen en la preferencia del color en el uso de prendas de vestir con temática de naturaleza en mujeres.	11:20	
	11:40	Receso 11:40 - 11:50
David Rincón Ávila México 11:50 - 12:10 Alimentos, color y percepción como detonante de consumo.	11:50	
	12:10	Ana Olivera y Marcela de Niz México 12:10 - 12:30 Colores de la tierra, construcción y paisaje.
Claudia Méndez Escarza México 12:30 - 12:50 El color en la naturaleza representada en el Códice Zouche Nuttall.	12:30	
	12:50	Margarita Lagarde México 12:50 - 13:10 Factores evolutivos de la sensación y la percepción del color.
Conferencia Magistral Orietta Polifroni Peñañe Elda Cecilia Ramirez Mejia Colombia 13:10 - 14:00 El color como experiencia en los espacios interiores de Barranquilla, Colombia.	13:10	
	14:00	Comida 14:00 - 16:00
Ivette Alvarado Garcia e Hilda Castro Álvarez México 16:00 - 16:20 El color en la naturaleza y su experiencia de confort en espacios de salud.	16:00	
	16:20	Paola Ayesha Corral Avitia México 16:20 - 16:40 Expresiones artísticas y color en el espacio público.

PROF. ALFREDO PÉREZ BOLDE 5/N, ASTAUG, 36250 GUANAJUATO, GTO.

Conference program

NORWAY

FORUM FARGE

FORUM
FARGE®

Forum Farge, the Norwegian Colour Association, was founded on 10th April 2013. The purpose of Forum Farge is to stimulate research on all aspects around colour, to disseminate research-based knowledge about colour, and to facilitate applications of this knowledge to solve colour related problems within art, design, architecture, science, and technology on a national level. The group became a member of AIC in 2014. Official website: www.forumfarge.no

BOARD MEMBERS 2023

Kine Angelo, Bjørg Owren, Ingvild Festervold Melien, Heidi Pettersvold, Elise Dee Krekling, Bent Erik Myrvoll, Steven le Moan, Carle Lange, and Alexandra Christea.

PARTNERSHIP

Forum Farge is connected to Norwegian Colour and Visual Computing Laboratory (Colourlab) and the Light and Colour Centre at the Norwegian University of Science and Technology (NTNU), and partners with the Italian Colour Association (Gruppo del Colore).

MAIN EVENTS BY FORUM FARGE

After two years of webinars and isolation, it has been important for Forum Farge to create events where people could physically meet, connect, inspire, and be inspired.

International Colour Day, 21 March

The day was celebrated in connection with the Annual Meeting and located at the offices of Snøhetta architectural firm in Oslo, with presentations by Gunnar Ottosson (artist and founder of Ottosson Färgmakeri), Heidi Pettersvold Nygaard (interior architect at Snøhetta), Hilde Hauan Johnsen (textile artist) and Nicolay Wesseltoft (creative technician at Snøhetta).

Ottosson shared his visions of the use of sustainable linseed oil paint, and Pettersvold Nygaard presented her work on how to strategically use colours in interiors, specifically in the underwater restaurant Under. Hauan Johnsen gave an introduction of how to dye yarn and textiles using natural, locally sourced pigments, and Wesseltoft demonstrated how the interaction of images, colour and sound can be used in architectural representation.



Forum Farge, International Colour Day 2023



Forum Farge Felt Workshop



Forum Farge Weaving Workshop

Colour Workshop and Seminar, 27 October

The event was in cooperation with the Faculty of Fine Art, Music and Design at the University of Bergen, where the event took place. During the day, students and members were invited to participate in two workshops held by textile artist Jon Pettersen and Merete Paulsen (*Weaving with Colours*), and Matilda Norberg (*Felting in a Limited Palette - color setting based on surplus wool*). The seminar took place in the evening, with presentations by Ines Moco Pereira (architect at The City Heritage Office in Bergen), Jon Pettersen (textile artist), Grete Smedal (interior architect) and Rolf Hermansen (architect).

Pereira presented the municipalities strategy for wood architecture in Bergen, Pettersen took us on a journey as a textile designer in Norway and Smedal and Hermansen gave a colourful talk on the history of the design school.



Forum Farge Colour Workshop and Seminar

PORTUGAL

ASSOCIAÇÃO PORTUGUESA DA COR



associação portuguesa da cor



International Colour Day 2023 Celebration, "Portugal a Cores".

2023 ACTIVITIES

The Portuguese Color Association has continued developing the work of color dissemination through the community. We thus present our main activities on color during the last year.

ICD 2023

The International Color Day 2023 was celebrated under the topic "Portugal a Cores" ("Portugal in Color"), between March 21st and April 18th through an exhibition and several color activities. The exhibition was organized in collaboration with Santo Infante, a Portuguese brand that works with Portuguese artists (furniture and design). It took place at Fabrica Features, Benetton

Mega Store, Chiado, Lisbon, and it was thought to be a sign of hope, optimism and life, among all Portuguese people. In result, 15 artists created unique colored pieces of art, and 8 brands (furniture and decoration) were also represented.

Other color activities took place during the 4 weeks celebration. More information: <https://www.apcor.org/dia-internacional-cor/#icd14>

OTHER EVENTS

February 16th | Book launch at FA-ULisboa (Faculdade de Arquitetura da Universidade de Lisboa). Title: "Cor: Espaço Urbano, Arquitectura e Design" (PT) / "Colour, Urban Space, Architecture and Design" (EN).



AIC EC Members at the AIC2023 Closing Ceremony

May 5th | Round table on Color at the “*Design Research and Innovation Week*”, at IADE, Lisbon.

May 24th to 28th | Color installation for the “*Lisbon Design Week*”, at UNBOX.COLOR, Lisbon.

May 25th | Round table at the “*Sustainable Value Creation Summit*” organized by VCW – Value Creation Wheel with the topic “*How to create value through color*”, at Nova SBE, Carcavelos.

June 3rd | Collaborative activity “*Elogio à Cor*” (“*Eulogy to Color*”) at the annual event for the academic community and families, at Colégio Valsassina, Lisbon. In partnership with Magjacol, a Portuguese paint brand.

June 24th | Informal event “*Conversas com Cor*” (“*Conversations with Color*”) for APCor members to socialize and get to know each other, at Casa das Histórias - Paula Rego, Cascais.

September 28th to 30th | Color activities at the “*Homeing*” event (home and décor), at Pavilhão Carlos

Lopes, Lisboa. In partnership with UNBOX.COLOR, a Portuguese brand for color consultancy.

December 16th | Webinar “*Conversas com livro aberto - Cor: Saúde, Bem Estar e Conforto / Colour: Health, Wellbeing and Comfort*” with authors and editors.

AIC2023 | ELECTIONS

The APCor founder and Honorary President, Professor Maria João Durão was elected AIC Vice-President at the AIC2023 General Assembly during the AIC Congress in Chiang Rai, Thailand. In 2025, at the AIC Congress that will take place in Taipei, Taiwan, Professor Maria João will assume the role of AIC President.

AIC2023 | BOOK ICD

The book *International Colour Day: A Decade and Beyond*, was presented by the ICD coordinator, Maria João Durão at the AIC 2023 Congress, Chiang-Rai, Thailand and will be launched at the AIC 2024 Meeting in São Paulo.

PORTUGAL

ASSOCIAÇÃO PORTUGUESA DA COR

AIC2023 | SGAD

In 2023 the Study Group on Arts and Design (SGAD) organized its AIC2023 workshop in collaboration with Colour and Light Research Group of CIAUD - Lisbon School of Architecture's Research Centre of Architecture, Urbanism and Design, the Portuguese Colour Association, and the Colour Society of Australia.

The SGAD Workshop was held at 15th AIC Congress 2023 Chiang-Rai, Thailand, 1st December under the general theme: 'Colour research impacts in the Art and Design fields'. It included an invited lecture, "Colour research impacts in Design praxis: An analysis of academia and industry approaches to colour" by Cristina Caramelo Gomes, followed by the 2nd SGAD Virtual Exhibition of Arts and Design, presented by SGAD Chair Maria João Durão.

APCOR PUBLICATIONS

The book "Colour: Health, Wellbeing and Comfort" (EN)/"Cor: Saúde, Bem Estar e Conforto" (PT) is in its final preparation phase. This is an APCor edition in collaboration with CIAUD - GICL (Colour and Light Research Group) and LabCor (Colour Lab), based at FA-ULisboa (Faculdade de Arquitetura da Universidade de Lisboa). The book is a bilingual publication (Portuguese and English) on colour, with an international scientific committee of researchers, which aims to disseminate the research undertaken in the multidisciplinary area of colour.

CURRENT ACTIVITY BY EACH MEMBER

Ana Paula Pinheiro & Rui Barreiros Duarte

Duarte, R., & Pinheiro, A.P. (2023). Cathedral of Portalegre: Restoration of the glazed tiles. Arts & Design Virtual Exhibition (2nd edition) of the AIC Study Group on Arts and Design (SG AD). 15th AIC Congress. Chiang Rai, Thailand, December 1st.

Duarte, R., & Pinheiro, A.P. (2023). A experiência da cor. [Oral presentation]. IV Seminário do LabCor | GI.CorLuz "Retrospectiva: Ensino, Pesquisa e Prática". FA-Ulisboa, Lisbon, May 25th.

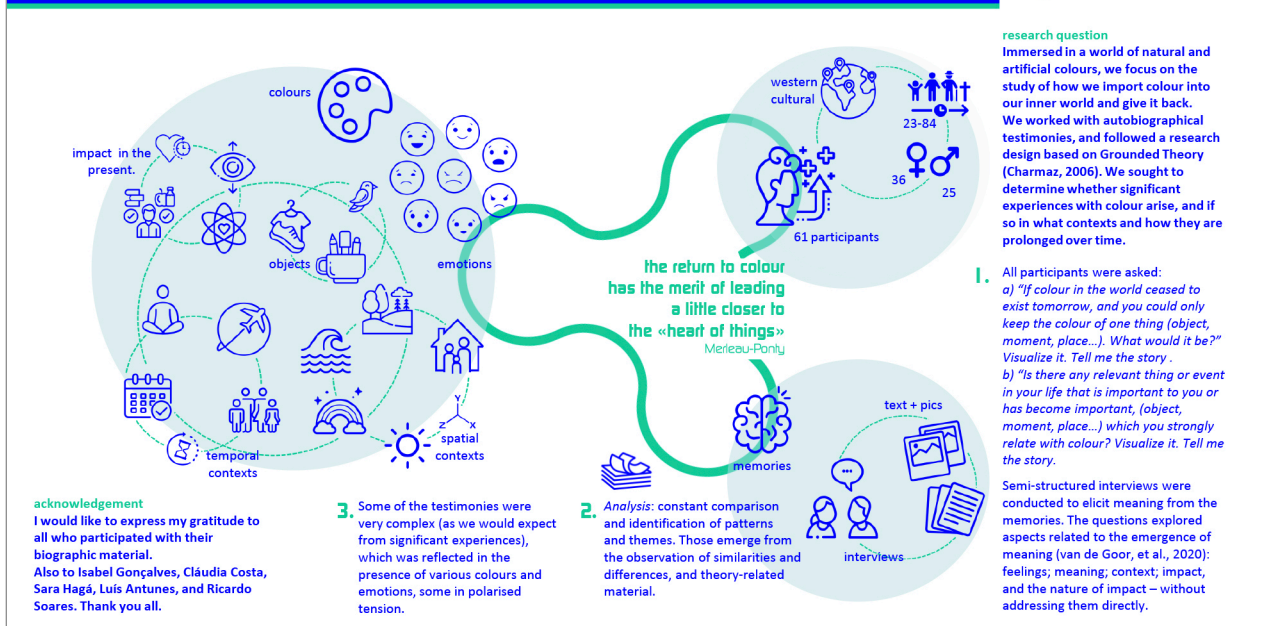
The authors also presented the work *The Question of Color / The Color in Question: Cathedral of Portalegre* at the 15th AIC Congress, Chiang Rai, Thailand, as follows: at the AIC Study Group on Environmental Colour Design (SG ECD); in a poster session; and published it in the AIC23 book of proceedings (pp. 940-945, ISBN: 978-0-6484724-5-2).

Luisa M. Martinez

Martinez, L.M., Ramos, F.R., Cantú, W., Amaro, A.C., Casadinho, M., Martinez, L.F., & Kumar, S. (2023). The color of things: A bibliometric approach for new marketing and business strategies. Paper presented at the XVIII Conference of the GdC (Gruppo del Colore): Italian Color Association, Polytechnic of Milan – Lecco territorial hub, Lecco, Italy, September 15th-16th.

The Atlas of Colour – Emotion

Verónica Conte | conte.veronica@gmail.com



Conte, Verónica (2023). The Atlas of Colour - Emotion

Luisa Martinez also chaired the sessions 'Color and Lighting' and 'Color and Physiology' at the XVIII Conference of the GdC, Lecco, Italy.

Gonçalves, A., Martinez, L.M., & Ramos, F.R. (2023). The influence of colour in the decision-making process: Luxury brands. Paper presented at the 7th Theory and Applications in the Knowledge Economy (TAKE) Conference, Sopot, Poland, June 28th-30th.

Funded research project by Europeia ID (Universidade Europeia) | Title: *BIBCOLOR - A bibliometric approach of color from a marketing perspective: Overview and recommendations for the future* | Duration: 12 months

Vanda Matos

Matos, V. (2023). 2003-2023. IV Seminário do LabCor | GI.CorLuz Retrospectiva: Ensino, Pesquisa e Prática [Conference session], Lisbon, May 25th.

Matos, V.P. (2023, 27 nov-02 dec) "Amoreiras Tower Center a Post-Modern Building". 2nd AIC Study Group on Art and Design Virtual Exhibition, AIC 2023 Congress [Poster presentation in conference session], Chiang

Rai, Thailand (Poster presented by Professor Maria João Durão).

Project: *Color Sustainability and Authenticity in Portuguese Contemporary Architecture (2018-2026)* | Team: Carlos Alho (Coord.), Vanda Matos (CIAUD, FA-Ulisboa)

Project: *Social housing and UrbanCroma, a factor for integration, identity and sustainability (2022-2026)* | Team: Margarida Gamito (coord.), Fernando Moreira da Silva (FA-ULisboa), Cristina Caramelo Gomes (ULusíada), Cristina Pinheiro (IADE – UEuropeia) Vanda Matos (CIAUD, FA-Ulisboa)

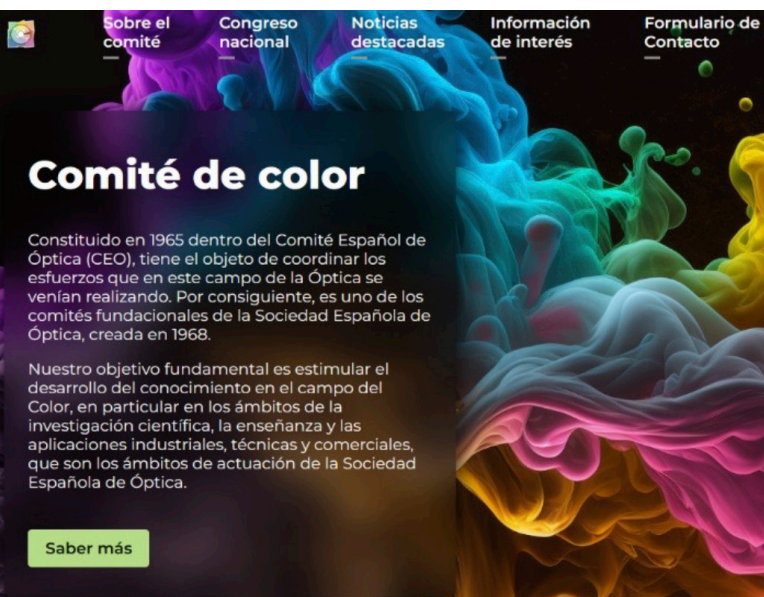
Verónica Conte

Conte, Verónica (2023). Unveiling Emotions and Meaning Through Colour Significant Experiences. [Poster presentation]. 15th AIC Congress. Chiang Rai, Thailand.

Conte, Verónica (2023). The Atlas of Colour - Emotion. [Poster session]. International Conference on Art and Health, MAAT - Museum of Art, Architecture and Technology, Lisbon, November 10th.

SPAIN

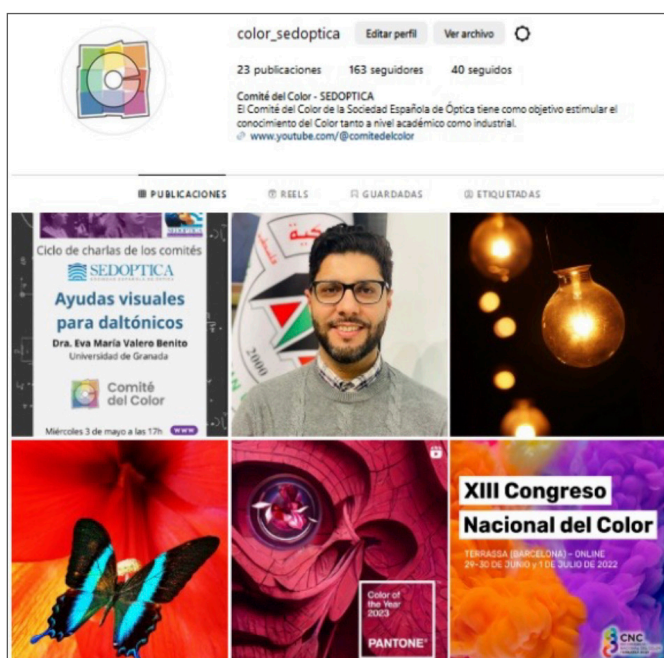
COMITÉ DEL COLOR
SOCIEDAD ESPAÑOLA DE ÓPTICA



GENERAL HIGHLIGHTS

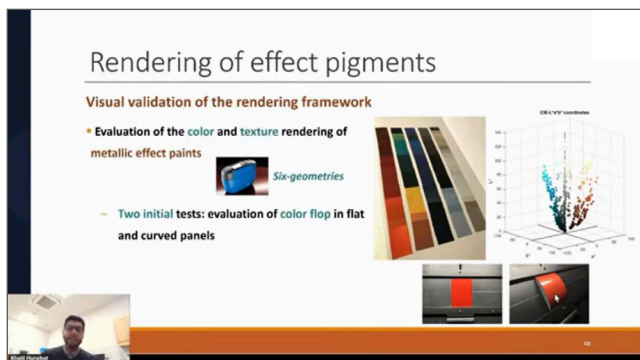
Our committee maintained its customary activities participating in different events around color (conferences, workshops, courses, seminars and outreach activities).

It is noteworthy the update and increase of the digital impact of our committee through the completely renewed [website](#) and the Instagram profile ([@color_sedoptica](#)). The website was rebuilt in order to match the current flow and visualization of information and to be adaptable to any device (smartphone, tablet, laptop, etc.). This was possible thank you to the funding from the Sociedad Española de Óptica through the calls *Microayudas SEDOPTICA luce 2022 and 2023*. The Instagram profile is used to share activities related to the committee, and to promote color science and technology by posting some pills about the causes of color. We have reached 163 followers in a little more than a year. All this content is also published on the Facebook profile of the committee ([@comitedelcolor](#)).

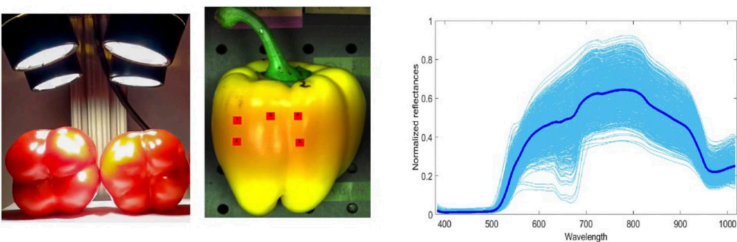


Main page of the renewed website (above). Instagram profile (below).

The committee supported activities in the framework of master's courses about color such as the "*Master Erasmus+ COlour in Science and Industry (COSI)*", organized by the University of Granada, and the "*Master Erasmus Mundus EUROPHOTONICS and Master in Photonics (Course: Active and spectral imaging)*", organized by the UPC.



Talk "Improved reproduction and visualization of effect pigments" by Khalil Huraibat, Arab American University



Left: image capture setup with the illumination and the linear stage. Center: Example of camera response extraction in the VISNIR range. Right: spectral reflectances of the yellow variety set in the VISNIR range for all maturity stages. The mean spectral reflectance is shown in bold line.

The committee also supported several international conferences such as the **31st Color Imaging Conference 2023 (CIC31)** and the **15th Congress of the International Color Association (AIC 2023)**. Additionally, other conferences, workshops and seminars were organized along 2023 about different aspects of color.

It is also remarkable the participation of the Committee in the International Color Day 2023. In this framework, the committee organized an online talk entitled "Improved reproduction and visualization of effect pigments" given by **Khalil Huraibat** from the Arab American University (Palestine), which can be found in the YouTube channels of the **committee** and **SEDOPTICA**. During this talk, some attempts for the digital rendering of the effect pigments was presented. This digital rendering is a very active hot topic since this type of coatings changes considerably its visual attributes such as color and texture with the illumination/viewing geometry. Achieving accurate simulation of these materials demands an extra effort due to the physical complexity of their surfaces.



BE-LIGHT PROJECT: Cristina Massoller and Meritxell Vilaseca

RESEARCH HIGHLIGHTS

In the research section, we would like to highlight some projects with the highest impact in Color Science and Technology.

The **BE-LIGHT project**, an international consortium of universities, hospitals and companies to developed photonics technologies aided by artificial intelligence to contribute to the diagnosis of different pathologies. This project is led by **Meritxell Vilaseca**, the past president of our committee, from the Centre for Sensors, Instruments and Systems Development of Universitat Politècnica de Catalunya (UPC).

On the other hand, a team of researchers from the Color Imaging Lab of the University of Granada (UGR) has developed a method to classify the ripeness of peppers using hyperspectral imaging. To prevent overripe peppers from being packaged, a new method to measure the product's ripeness was developed. The scientists analyzed the spectral reflectance of peppers in the visible and near-infrared range to determine the maturity of peppers from three different crops, identifying which spectral bands provide the best maturity classification rate for peppers. The project developed a realistic scenario similar to a conveyor belt system where peppers are evaluated with four sorting algorithms to predict their maturity. The algorithm used for this grading achieved success rates of more than 90 % thanks to a system that improves the shelf-life assessment of peppers and ensures better product quality for customers.

SWEDEN

SWEDISH COLOUR CENTRE FOUNDATION

STIFTELSEN
SVENSKT
FÄRG
CENTRUM

SWEDISH COLOUR CENTRE FOUNDATION

PRISAD FÄRG/AWARDED COLOUR 2023

The first prize winner of awarded Colour 2023 with the theme *“Black, white and everything in between”* was Emily Palle Holm, Swedish School of Textiles, University of Borås with her project *“Oriori”*. The second prize went to Leonie Burkhardt, Swedish School of Textiles with *“Linum, between nature and artificial”*, University of Borås and the third prize to Rosita Ståhl, University of Arts, Crafts & Design, Stockholm with *“Beneath the surface of craft”*.

Awarded Colour is a colour design competition for students and recent graduates in art, design and architecture and puts the colour in focus and has been set up to highlight the importance of good colour education.

During autumn 2023 we have announced Awarded Colour 2024 with the theme *“Celebrate Colour!”* The background to this theme is that the Swedish Colour Centre Foundation celebrates 60-year 2024!

THE YEARLY TEACHER'S SEMINAR IN OCTOBER

The yearly teachers' seminars brings together our network of teachers in Swedish design- and architect's schools with the goal to raise the interest and the importance of colour education, both for students and teachers. With the Teacher Network *“Young Colour*

Power”, we want to create a meeting place with the aim of driving development forward, engaging and linking design, architecture and creative industries. The teacher network provides opportunities for knowledge exchange and is part of the Swedish Colour Centre Foundation. This year in October we arranged a physical and practical workshop with a focus on colour teaching. It was the Swedish School of Textiles in Borås who invited teachers to this *“Teacher's Day”*. We got an insight into colour education in textiles and fashion and visited selected textile lab environments where students and researchers develop prototypes. But above all, we met for conversations and exchange of experiences between participating teachers from different universities.

The night before we had a special guided tour at the Textile Museum of Sweden Borås and the exhibition *“Printed Positions”*. In Printed Positions, contemporary textile-pattern design is explored through works by 14 Nordic designers and artists.

MEMBER'S MEETINGS

We have switched to a mix of digital and physical colour meetings to be able to reach out to our entire country.

In **January** we had an invited speaker Svante Pettersson, Lighting Artist/Lighting Designer, who gave a talk named: *“Listen to Our Light Evangelist Svante Pettersson”*. A physical and digital meeting.



Awarded Colour 2023. The winners.



"Teacher's Day", Seminar

In **February** we got a special guided tour at Millesgården and the exhibition *"The set table"* by Hanna Hellquist. Millesgården was the artist home of the sculptor Carl Milles and his wife painter Olga Milles. Today it is a well-renowned museum with an artist home, an antique collection, a beautiful sculpture garden and an art gallery.

In **March** 21, we had a physical and digital celebration of the International Colour Day. A physical meeting at Ogeborg in Stockholm with presentation of the winners in Awarded Colour 2023. We also had an inspirational colour talk by Louise Thanem Wallenberg, Professor of Fashion Studies at Stockholm university about *"Fashion and film: A symbiosis of the great importance of colours"*.

In **April** 25 we had a digital meeting and a presentation of a new book *"The Blue Connection – exploring a universal colour"* with author Monica Haag. Editors: Monika Haag, Mark Woodman.

In **May** we got a special guided tour at the National Museum of Stockholm and the exhibition *"The Garden – Six centuries of Art and Nature"*. This exhibition was about how mythical and real gardens have been

depicted in art, but also about how art has left its mark on gardens, from the Middle Ages until today.

In **September** we got a colour meeting at Kulturhuset Stadsteatern – the huge glass building on the main square that houses the Stockholm City Theatre and the City Arts Centre. The building in itself is an architectural landmark. We had a guided tour at the exhibition *"Frida Kahlo – Her Photos"*. Frida Kahlo, the world-famous Mexican artist, lived a turbulent and eventful life,

In **November** we had a digital meeting arranged by Modern Art Museum, a live presentation about Hilma af Klint's (1862 – 1944) fascinating artistry and the series *"The Ten Largest"*. During the digital presentation, one of the museum's art educators talked about the exhibition *"Hilma af Klint – The Ten Largest"* and showed stills and held a very interesting talk.

In the end of **November** our annual meeting took place as a physical and a digital meeting. After all formalities we could listen to an inspiring talk *"The importance of colour for the architectural expression"* by Martin Rörby, a well-known architectural historian and writer.



Organizer and pro colore Board Member Marius Guirard guided the participants through Copenhagen's Nordhavn harbour area.

Painting with the Printing Press

On 12 May 2023, Thomi Wolfensberger, publisher and owner of a family-run lithographic and offset printmaking studio in Zurich, invited the members to have a look behind the scenes and showed an example of how images are brought to life with the printing press. <https://www.wolfensberger-ag.ch/en>

Visit at Monika Kiss Horvath Studio

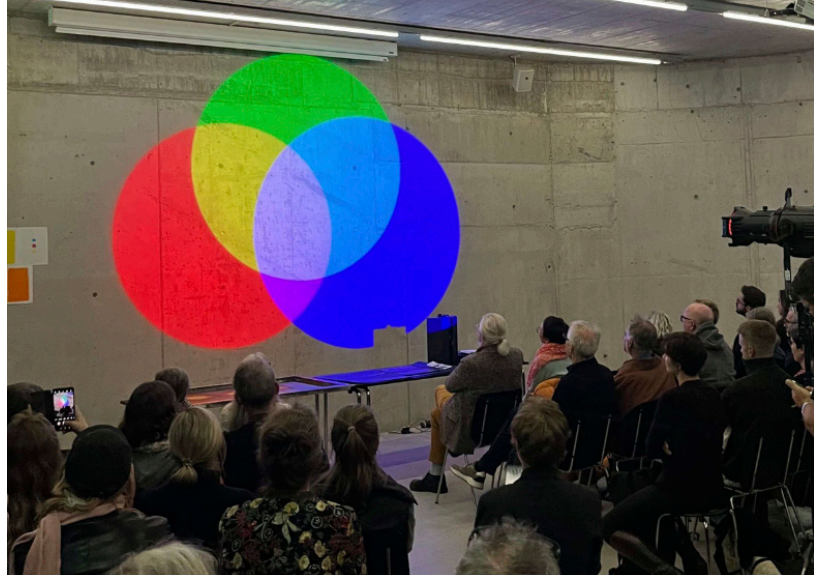
On 2 June 2023, the artist unveiled her personal approach to colour by creating one of her paintings in the presence of the attentive members and then delighting them with her projects on art in architecture, colour concepts for architecture, and artistic work. <https://mokiho.ch>

Excursion to the Ballenberg Colour Library

On 26 August 2023, the members of pro colore visited the Ballenberg Open-Air Museum, and in particular, its colour library acquired in 2022, a veritable cultural treasure that belonged to the Bernese colour expert Peter Rieben. <https://ballenberg.ch/en/>

The Colours of Copenhagen

7-10 September 2023: The 4-day programme of pro colore's trip to Copenhagen, Denmark, included several highlights. For example, the exhibition "Weaving



Demonstration by Marcus Pericin during pro colore's special event "Red-Green-Blue."

the Light" of South Korean artist Kimsooja in the art gallery Cisternerne, guided tours at the Thorvaldsens Museum and the Ny Carlsberg Glyptotek as well as visits to the Design Museum Danmark and the Copenhagen Contemporary. Another highlight was the visit to the studio of Danish artist Kristine Mandsberg. On an architectural tour, the participants explored the attractive Nordhavn harbour area, a creative hub of brand new architecture.

Red-Green-Blue Special Event

On 2 November 2023, pro colore president Ralf Studer hosted artist Marco Ganz, screen printer Lorenz Boegli, photographer and filmmaker Patricia von Ah, color-light researcher Marcus Pericin and lithographer Thomi Wolfensberger. The presenters offered a first-hand demonstration of the spectacular and innovative RGB printing process on the basis of special red, green and blue reflective pigments applied to a black background. This event proved to be a success with around 100 participants.

Lecture and Workshop by Dr. Ines Klemm

On 8 December 2023, the last meeting of the year, Dr. Ines Klemm welcomed the members to her Studio Latrace in Lucerne and gave a lecture on colour and well-being in architecture, hospitality and design. <https://latrace.ch>

TAIWAN

COLOR ASSOCIATION OF TAIWAN



Group photo of the 23rd International Color Symposium

THE 23RD INTERNATIONAL COLOR SYMPOSIUM

Since its establishment in 2000, the Color Association of Taiwan (CAT) has continuously held an annual International Color Symposium. This year marks the 23rd year of the event. On November 11, 2023, a Saturday, the “Color and Design” academic symposium was held, providing a platform for professionals from various fields to discuss research findings and practical solutions in the application of color in design. The symposium featured Professor Tsuei-Ju Hsieh from the Department of Art and Design at National Tsing Hua University, who spoke about “Color Design Research Trends”, and Dr. Fu-Ling Chang from the Textile Industry Comprehensive Research Institute, who discussed “Color and Textiles - AI Color Rendering in the New Era of Digital Printing.”

AIC 2023 PARTICIPATING

Eight members of the association participated in the AIC 2023, held in Chiang Rai, Thailand, from November 28 to December 2. They joined color experts from around the world, expressing great interest in the warm hospitality of the Thai hosts and the local cultural presentations.



CAT members participated the AIC 2023



AIC 2023 participating



iPAS color specialists meeting

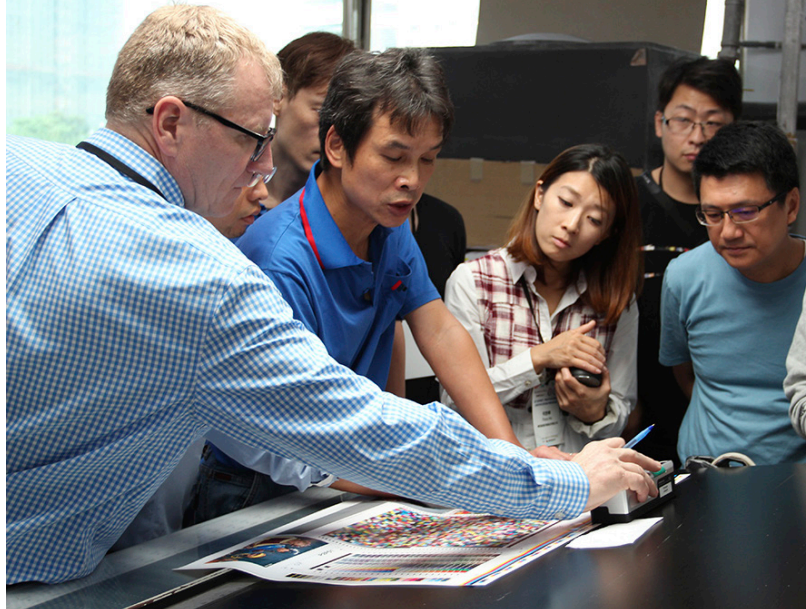
IPAS CERTIFICATE EXAM IS ONGOING

The iPAS Certified Color Planning and Management Specialist Exam, co-organized by the Color Association of Taiwan (CAT) and funded by the government, has been running for six years with less than 40% of participants earning certification. To date, 2,132 individuals have qualified as Color Planning Specialists and 411 as Color Engineering Specialists. However, applicant numbers have declined recently, influenced by Covid-19 and a decreasing birthrate.

To counter this, CAT conducted a teacher training camp in October 2023 to improve educators' skills in color-related fields, aiming to better prepare students for the exams. Additionally, a meeting in August 2023 led to a consensus on the increasing importance of "Color Management" in the certification curriculum, with plans to include new color applications and industry standards. CAT is now organizing a focus group to update and refine the certification content, adapting to industry changes and attracting more candidates.

ADVANCING COLOR QUALITY: IDEALLIANCE TAIWAN'S MILESTONES IN THE PRINTING INDUSTRY BY 2023

In a strategic move to significantly improve the color quality assurance capabilities of Taiwanese printers, the Color Association of Taiwan, in partnership with the Graphic Communications Foundation (GCF), Taiwan, and Idealliance, USA, established the Idealliance Taiwan office. This initiative, which commenced in



The G7 training program



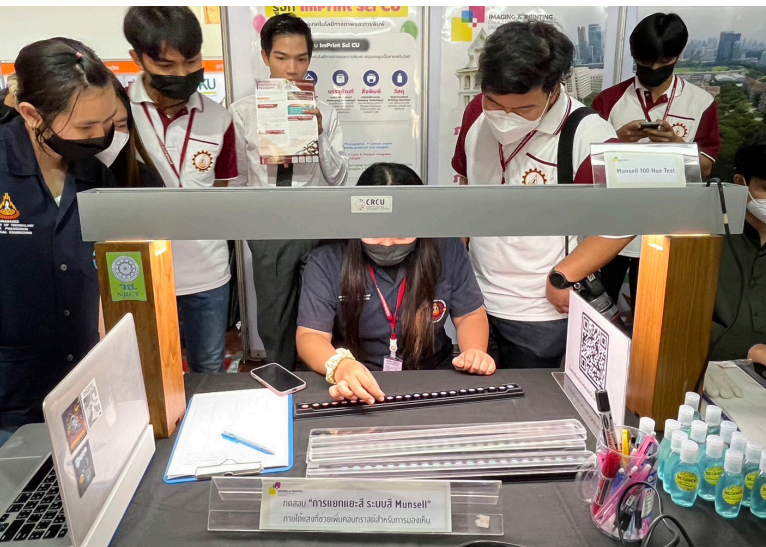
The group photo of G7 Expert Certification Program

October 2018, has been pivotal in elevating the standards of Taiwan's printing and packaging industry through the facilitation of international printing standard certification and expert training programs.

The year 2023 stands out as a landmark period in this ongoing endeavor. Idealliance Taiwan, with the support of the Color Association of Taiwan, successfully hosted a series of G7 Expert certification training sessions and numerous seminars focusing on color management and printing standardization. This effort has resulted in a remarkable growth in the number of certified G7 Experts within the country, escalating from just 12 in the initial phase to a robust 72 by 2023. Moreover, the increase in the number of printing companies achieving the G7 Master recognition is equally impressive, rising from 16 to a notable 63. These figures not only represent the successful efforts of Idealliance Taiwan but also underscore the pivotal role of the Color Association of Taiwan in fostering industry excellence and global competitiveness in the field of color quality and printing standards.

THAILAND

COLOR SOCIETY OF THAILAND



Discriminating colours under the innovative lighting designed for the elderly and those with low vision. The demonstrations attracted a number of pupils throughout two days of the event.

In 2023, the Color Society of Thailand (CST) was busy preparing for AIC2023. As a consequence, the CST did not host any regular events as in the past years. However, the CST President, **Pichayada Katemake**, participated in three events with her research team and work to fulfill the following aims of team's research work:

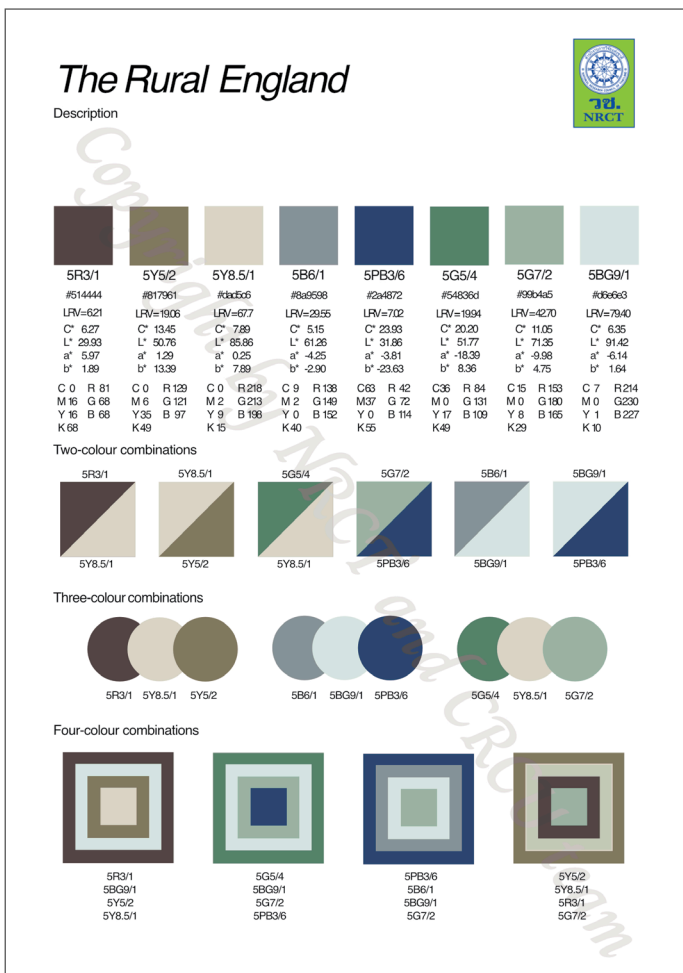
- To demonstrate the innovative lighting that could enhance the colour contrast.
- To demonstrate the web application for simulating the low-vision.
- To explain the colour palettes designed for the elderly and the low vision with the Light Reflected Values (LRV)

First event: The 23rd Education Exhibition for high school pupils held from the 2nd to the 3rd of **February** 2023 at the Suranaree University of Technology.

Second event: The Innovation Exhibition at the Faculty of Science, Chulalongkorn University from the 1st to the 3rd of **April** 2023.

Third event: The National Science and Technology Expo 2023 at IMPACT Arena, Exhibition and Convention Center, Muang Thong Thani, Bangkok held from 11th to 20th **August** 2023.

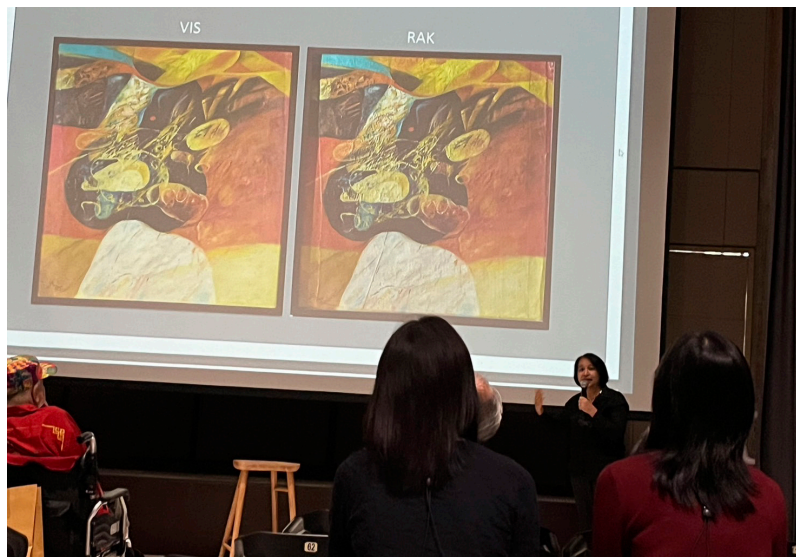
Pichayada Katemake and her students gave presentations at the Satellite-ICAL (satellite session of the International Symposium on Imaging Science: BAGIS Track invited



An example of colour palettes at the National Science and Technology Expo 2023.



Some of the participants in the satellite session of the International Symposium on Imaging Science: BAGIS Track.



Special talk on 88 years of Prateung Aimcharoen at Ratchdamnoen Contemporary Art Center (RCAC) on 23rd December 2023

by Professor Yoko Mizokami) on June 29, 2023, hosted by Chiba University. Five topics under her research team included:

- Katemake, P.: Mixed light LED and its applications (Invited Speaker)
- Plerksophon, E. and Katemake, P. and Trémeau, A.: Color appearance of gamma-irradiated quartz
- Radsamrong, A., Katemake, P., Dinét, É., Kalavally V. and Trémeau, A.: Determination of Narrow-Band LEDs for luminance contrast enhancement
- Dethsuphar, D. and Katemake, P.: Evaluating the efficacy of technical images for detecting deterioration in yellow pigments
- Khampaeng, S. and Katemake, P.: Multispectral imaging database and spectral reflectance of pigments and its application

Dr. Nawarat Kaew-On, our member as a conservation scientist, contributed to arts and science activities as follows:

1. Demonstrate the use of scanning micro X-ray fluorescence on known a pigmented painting in February 2023.
2. Deliver a lecture on the use of scientific devices for analysis of arts, including pigments on a painting, at the Faculty of Science, Silapakorn University, in February 2023.
3. Deliver a lecture on the use of scientific devices for analysis of arts, including pigments on a painting to PhD students at Faculty of Fine arts, Burapa University in March 2023.
4. Special talk on 88 years of Prateung Aimcharoen at Ratchdamnoen Contemporary Art Center (RCAC) on 23rd December 2023. .

UNITED STATES

INTER-SOCIETY COLOR COUNCIL (ISCC)



Our annual goals for 2023 were focused on expanding our educational programs. As a result, 2023 was a very busy year for the Inter-Society Color Council (ISCC). In addition to publishing our quarterly newsletters online for members, four successful webinars were held free of charge and open to anyone interested in the topics. To learn more about our webinars, please go to <https://iscc.org/SeminarSeries>. We hosted three Fluorescent Fridays, which are virtual events where university students present their work and network with color professionals and fellow students. Two Colorful Connection members-only events were held where members met online in an informal setting to discuss color topics across disciplines.

The ongoing Colour Literacy Project (CLP) is a joint project between ISCC and AIC. This work is conducted within the ISCC/AIC Joint Colour Literacy Project Committee. Please see more information on the work of this cooperative effort in the Colour Education AIC Study Group section of this Annual Review. The CLP team hosted three online Forums in 2023. Recordings are available on YouTube at <https://www.youtube.com/channel/UCS1iGEmfo85NKNM7PfkVVig>

COLOR IMPACT 2023 – “COLOR AND THE HUMAN EXPERIENCE”

The primary focus of this report is going to be our main event of 2023, Color Impact 2023 – “Color and the Human Experience”. This was our first in-person event since the pandemic, and we are delighted to say that it was a huge success! Over 100 participants gathered at the Rochester Institute of Technology in Rochester, New York for four full days of presentations, short courses, tours and other activities. Each day began with a keynote presentation that set the tone for each day’s themed sessions. The keynote speakers, presentation titles and themed sessions for each day were:

Dr. Domicela Jonauskaitė – “Colors and Emotions Across Cultures and Individuals”

- Themed Sessions: Color Response, Color Experience, and Panel on Color Psychology

Peter Donahue – “TikTok as Color Theory’s One-Room Schoolhouse”

- Themed Sessions: Education, Printing/Reproduction, Poster Previews, Panel on Art Exhibition

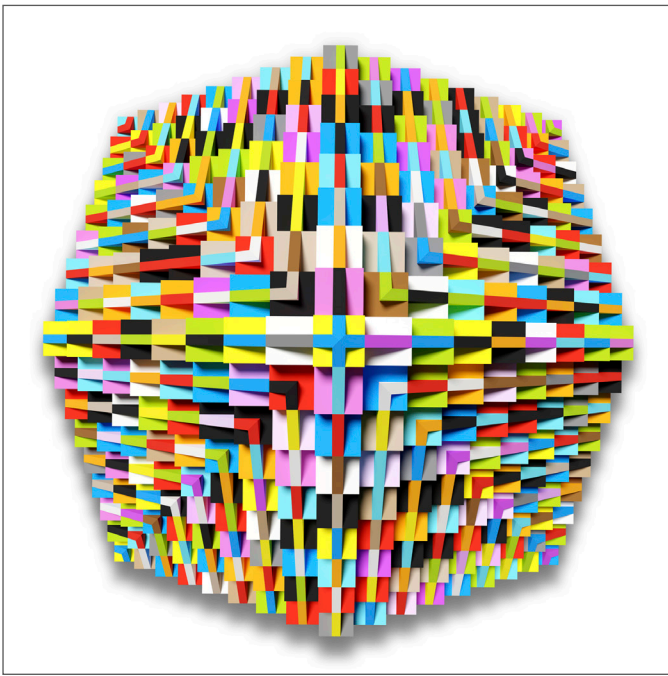


Figure 1a. Professional Division Award Winner, Andrew Reach

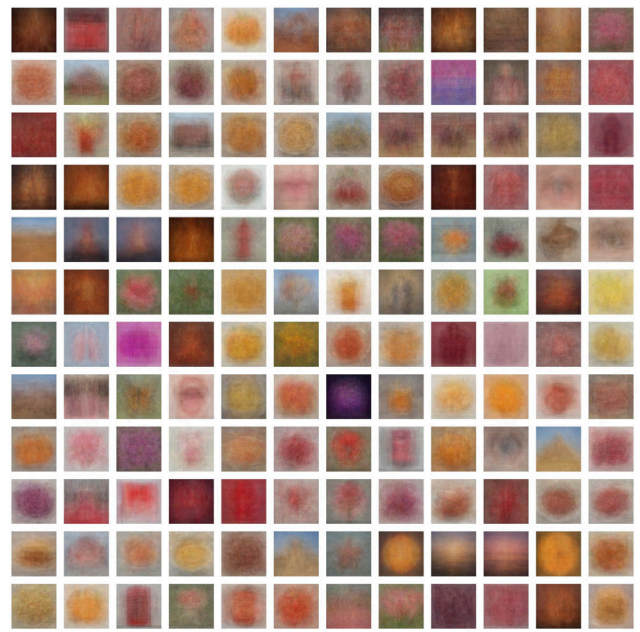


Figure 1b. Professional Division Honorable Mention. Ethan Nadler and Team

Professor Roy S. Berns – “Why Does My Artwork Reproduce so Poorly”

- Themed Sessions: Technology, Spotlight RIT

Kory Stamper – “Black, White, and Read All Over: The ISCC, Webster’s Third New International Dictionary, and the Quest to Define the Rainbow”

- Themed Sessions: History, and Art and Design, Color in the Environment, and Lightning Talks

The following workshops and activities were offered to participants in the afternoons:

- The Eye Opener Series: An Intro to the Color Literacy Project – **Maggie Maggio and Robin Kingsburgh**
- Measuring, Modeling and Rendering Surface Appearance – **James Ferwerda**
- Techniques for Creating Colorful, Decipherable Images for Color-blind and Sight-Impaired Persons – **Bill Fischer**
- Fifty Shades of Feeling – **Ellen Divers and Domicile Jonauskaitė**
- Beyond RGB: Low-Barrier-to-Entry Multispectral Imaging for Color-Accurate Art Documentation and Reproduction – **Leah Humenuck**

- There’s No Such Things As Color Space... Prove Me Wrong – **Mark D. Fairchild**
- LED Lighting: The Intersection of Color Science and Design – **Michael J. Murdoch and Kimberly R. Mercer**
- The Natural Color System: A Toolbox for Colour Designers – **Anders Nilsson**
- Fundamentals of Psychophysics – James Ferwerda
- Connecting with Color – **Jason Bemis**
- Turning the Kaleidoscope: Two Perspectives on the Meaning of Color – **Ellen Divers**
- Alphabet Soup of Color Notation – **Robin Meyers and Robert Buckley**
- Expanded Color Gamut Printing – Abhay Sharma
- Color for Everyone – **Jean Hoskin, Ann Laidlaw and Jodi Baker**
- Selection of Pigments for Color Applications – **Romesh Kumar**
- Digital Color Management Forum: From Basics to ACES – **Edward J. Giorgianni**
- Light Bathing – **Michael J. Murdoch**
- The Power of Red – **John Seymour**

There was one project forum for participants: Color Literacy Project Forum – *Color and the Perceiver*

UNITED STATES

INTER-SOCIETY COLOR COUNCIL (ISCC)

Participants were also able to attend the following afternoon tours:

- Guided Tour of the RIT Glass Laboratory Beyond the Pale (Ale) and Behind the Blush (Wine): The Colors of Potent Potables – Mark D. Fairchild and Stephen Viggiano
- Guided Tour of the Vignelli Center for Design Studies
- Tour of the Color Explorer Room – Maggie Maggio and Robin Kingsburgh
- Guided Tour of the Labs at the Center for Imaging Science
- Munsell Color Science Laboratory Anniversary Open House
- Tour of the MAGIC Center

Color Impact 2023 also sponsored an online art exhibit. The goal of the exhibit was to focus on creative colorful thoughts and expressions with respect to emotions, observations, theories, research, memories, and culture. The Award Winner for the Professional Division was **Andrew Reach**, *QUADRAMID V* (Figure 1a). The Honorable Mention recipient for the Professional Division was **Ethan Nadler and Team**, *144 Red Words, Concepts Associated with Red* (Figure 1b). The Award Winner for the Amateur Division was **Anamaria Rezende**, *Cores ao acaso* (Figure 2a). The Honorable Mention recipient for the Amateur Division was **Casey Sheppard**, *Peaches nâ Cream* (Figure 2b). The Award Winner for the Student Division was **Mark Chicoine**, *Moving through Fire, film and dance* (Figure 3a). The Honorable Mention recipient for the Student Division was **Shiqing Li**, *If I were a hedgehog* (Figure 3b).

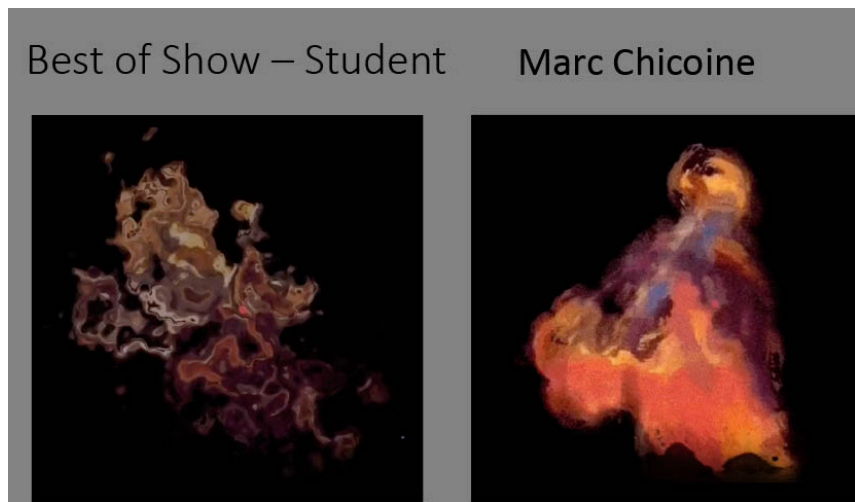
ISCC is pleased to invite you to learn more about our activities by visiting our website at www.iscc.org



Figure 2a. Amateur Division Award Winner: Anamaria Rezende, Cores ao acaso



Figure 2b. Amateur Division Honorable Mention: Casey Sheppard



Best of Show – Student

Marc Chicoine

Figure 3a. Student Division Award Winner, Mark Chicoine



Figure 3b. Student Division Honorable Mention. Shiqing Li