IUPAP C17: Commission on Laser Physics and Photonics
Report to IUPAP Council and Commission Chairs Meeting, Trieste, 25-26 April 2015

1. IUPAP C17 Young Scientist Prize

The IUPAP Commission on Laser Physics and Photonics runs its Young Scientist Prizes every two years, awarding two prizes in each round. These two prizes recognize the very highest level of achievements in fundamental and applied research. The 2015 prizes attracted 12 nominations, 9 male, 3 female. Geographical spread included Australia(3), Austria(1), Belgium(1), Canada(1), Germany(1), New Zealand(1), Spain(2), United Kingdom(1), USA(1).

The 2015 IUPAP Young Scientist Prize in Laser Physics and Photonics (Applied Aspects) will be awarded to Dr Mark Thompson, Centre for Quantum Photonics, University of Bristol, United Kingdom. Dr Mark Thompson is awarded the prize "for his contributions to the new and emerging field of quantum photonics, and particularly for his pioneering work in integrated quantum photonic circuits."

The 2015 IUPAP Young Scientist Prize in Laser Physics and Photonics (Fundamental Aspects) will be awarded to Dr Robert Fickler, Institute for Quantum Optics and Quantum Information, University of Vienna, Austria. Robert Fickler is awarded "for his groundbreaking contributions to the entanglement of complex structures of photons, which have opened up new avenues for quantum communication".

The award ceremony will be hosted at CLEO/Europe – EQEC 2015 21-25 June 2015 in Munich. http://www.cleoeurope.org/ and the award winners will be publicised more broadly thereafter.

Next call for the IUPAP C17 Young Scientist Prizes will be launched towards the end of 2016 for 2017. A longer term schedule of the major international conferences at which the prizes will be awarded, which also fulfill IUPAP requirements, is to be put in place before the call for nominations in 2016.

2. International Year of Light (and Light Based Technologies) 2015

The International Year is being celebrated extensively around the globe. The official website lists activities and documents the year: http://www.light2015.org/Home.html

91 National Nodes which are organising local campaigns, activities and events are also listed http://www.light2015.org/Home/About/Country.html

One of the very first events was inclusion of IYL related projections in the Sydney Harbour Bridge Pylon Displays on New Year's Eve. http://light2015.org.au/year-of-lights-starts-at-sydney-nye-fireworks/ The Sydney Harbour Bridge Icon turned on at midnight, a LED based display, featured a light bulb – in keeping with the theme of Sydney NYE2014 (Inspire Sydney) and IYL.

The official launch for IYL was held at the UNESCO Headquarters in Paris 19-20 January 2015. http://www.light2015.org/Home/About/Resources/Videos.html Prof Cristina Masoller attended as a representative of C17. Previous Chair, Prof Alan Shore (2008-2011) also attended as representative for Wales. Reports of the launch are reproduced in Appendix B. A copy of the program for the launch can be provided to anyone who would like it.

3. Laser Physicist/Research Leader Joins the Greek Government


Costas Fotakis is the new Deputy Minister for Research and Innovation in Greece.

Well known research leader in the European laser physics and photonics community, Professor Costas Fotakis, previously a Director of the Institute of Electronic Structure and Laser (IESL) at the Foundation for Research and Technology – Hellas (FORTH) in Crete, Greece and then elected as President of FORTH in 2011 started a new phase of his career as the Deputy Minister for Research and Innovation in the new Greek Government, January 2015. http://greece.greekreporter.com/2015/02/01/who-is-who-in-the-new-greek-government/ Should we think of creating a directory of "Physics Angels" – those who have a physics background and/or strong interest in physics who have become influencers and who can be neutral supporters of physics? A strong, collective, disinterested voice from such a grouping could help to raise awareness of the contribution of physics to society.

4. Associate Members of C17

At the IUPAP Executive Council and Commission Chairs meeting of October 2012 C17 proposed the European Physical Society (EPS) as an associated member of the commission. This was approved. Two representatives from the EPS were named as Associate members to formalize liaison:

Prof John Dudley, President of the EPS, former chair of the QEOD/EPS
David Lee, Secretary General, EPS

Currently, there is a request to confirm Associate members of the Commission on the IUPAP website. It is proposed the term of these two Associate members be extended through 2015.

5. Ongoing Work of the Commission in 2015

Undertake a review of C17 conference support and ensure that networking occurs via which appropriate conferences are forthcoming in applications for support.
Discuss priorities for Associate members – Commission related research, education and outreach activities to be included in the discussion
Support the international Year of Light strongly. Plan for longer term beneficial legacies of the year.

Appendix A. Commission Membership 2014-2017

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Appendix B. Report on Official Launch of IYL in Paris from Australian Optical Society News (first one with the permission of the author, Ben Eggleton)

AOS News Volume 29 Number 1 2015

International Year of Light Illuminates Paris

United Nations Educational, Scientific and Cultural Organization

International Year of Light 2015

The opening ceremony for the International Year of Light was held in Paris on 19-20 January.

by Benjamin J. Eggleton

The IYL light show on UNESCO in Paris.

The opening ceremony for the International Year of Light and Light-based Technologies was a two-day celebration of the wonderful and diverse ways in which human society is uplifted by our interaction with light. The ceremony was most aptly held at the UNESCO headquarters in Paris, a city known for centuries as The City of Light.

UNESCO itself was founded in the aftermath of World War Two as an organisation designed to build lasting world peace by encouraging all of humankind to regard themselves not as individual competing nations, but rather as one people working in solidarity towards a common future where democracy, development and human dignity are available to all. UNESCO strives to achieve this goal by promoting education as a human right, fostering intercultural understanding, pursuing scientific cooperation and protecting freedom of expression.

Over the two days participants were led through this journey by a range of people who have made understanding light the focus of their life's work. In line with UNESCO's goals, the organisers put together an event that celebrated the scientific, economic and social impacts of how light is used, offering a fascinating overview of the way a seemingly small innovation in one area can have profound impact in the lives of many.

Presentations ranged from Nobel Prize winners explaining how our understanding of light informs our understanding of the foundations of the cosmos, to grassroots workers showing how bringing eyeglasses to isolated African villages or light into the homes of the poorest slum dwellers can fundamentally change human lives for the better. It was a rare and wonderful opportunity for all of us to lift our focus from the specifics of our own work and see the way that science interconnects with human societies around the globe.

This diversity in the presentations gave rise to stimulating conversations of the intersection of physics, technology, development and society. Highlights included presentations from leading scientists such as Steve Chu (1997 Nobel Prize winner and former US Secretary of Energy), William Phillips (1997 Nobel Prize winner), Serge Haroche (2012 Nobel Prize Winner), Gerard Mourou, Zhores Alferov (2000 Nobel Prize Winner), Alain Aspect, Brian Wilson and Sune Svanberg (Former chair of the Nobel Committee for Physics). We also heard fascinating presentations that dealt with "light for humanity and culture", including captivating talks on light solutions for many problems in developing countries. The International Year of Light asks us to expand our intellectual horizons when we consider the impact of our work, and

At UNESCO headquarters in Paris in the main auditorium just before the formal proceedings begin.

the opening ceremony helped us to start doing so.

CUDOS, a gold sponsor of IYL, will be organising a year-long series of events and will be focusing on developing its International Outreach resources, teaching photonics science to school students.

Benjamin Eggleton, ARC Laureate Fellow, is Director of CUDOS, ARC Centre of Excellence and is with the Institute of Photonics and Optical Science (IPOS) and the School of Physics, University of Sydney.

Professor Andrew White from the University of Queensland and Professor Benjamin Eggleton from the University of Sydney at the UNESCO headquarters in Paris.

Professor John Dudley the Chair of the IYL steering committee and current President of the European Physical Society speaking at the opening ceremony. Image credit: © UNESCO/Nora Houguenade.

Dr William Phillips presenting his keynote talk on cold atoms with striking demonstrations that engaged the audience (Nobel Prize winner in Physics). Image credit: SPIE.

SPIE News

by Amy Nelson

Solutions Enabled by Light Inspire at International Year of Light Celebration

Credit for all images: SPIE, the international society for optics and photonics.

United Nations' International Year of Light was launched by high-profile, diverse speakers, with technologies both simple and futuristic being reported at the UNESCO-hosted event

Flavia Schlegel, Assistant Director-General for Natural Sciences, UNESCO at the opening ceremony.

Paris, the City of Light, was home to opening ceremonies launching the United-Nations-declared International Year of Light and Light-based Technologies (IYL 2015) in January. High-level speakers took the stage at UNESCO headquarters to celebrate the many uses and roles of light in our lives.

IYL 2015 was adopted by the United Nations to raise awareness of how optical technologies promote sustainable development and provide solutions to worldwide challenges in energy, education, agriculture, communications and health. With UNESCO as lead agency, IYL 2015 programs promote improved public and political understanding of the central role of light in the modern world while also celebrating noteworthy anniversaries in 2015 - from the first studies of optics 1,000 years ago to discoveries in optical communications that power the Internet today.

Light is solar power installations and LEDs bringing light to remote communities; it is what enables instantaneous communication across the globe and into space via phones and computers; it is a source of artistic inspiration for visual artists and musicians, and plays a role in most of the world's theologies.

UNESCO building interior.

The launch was one of the first IYL 2015 events. SPIE, the international society for optics and photonics, is a Founding Partner of IYL 2015.

More than a thousand participants went to Paris for the two-day event, with speakers including international diplomats and decision-makers, Nobel laureates, CEOs, and science and industry leaders from across the globe.

Keynote lectures, symposia, and round-table discussions covered areas of basic science, innovative lighting solutions for society, light pollution, emerging trends in photonics, the Einstein Centenary, the role of light-based technologies in addressing global challenges, light in art and culture, the history of science, and science policy.

Nobel Laureate Ahmed Zewail called for dialogue, not conflict, and vision and leadership to address the world's needs. Fellow Nobelist Steven Chu stressed the promise of solar power, and said there is "less than a 1-in-27-million chance that Earth's record hot streak is natural." Later, U.S. National Science Foundation director France Córdova stressed the importance of basic research in the discovery of new applications for light. Ziad Aldrees, Saudi Arabia's Ambassador and Permanent Delegate to UNESCO, harkened back to the scientific contributions of Ibn al-Haytham, whose seminal Book of Optics was written around 1015, and others working in the "Golden Age" of Muslim civilization.

Hearing from a wide variety of speakers provided a really broad perspective on how light impacts our society, said Anne-Sophie Poulin-Girard, a Université Laval student who was among the participants.

John Dudley of Université de Franche-Comté, president of the European Physical Society and chair of the IYL global steering committee, pointed out the importance of the IYL 2015 observance to the optics and photonics community as a means to communicate the importance of the technologies in everyone's lives. "We only get one chance," he said "It is nice to celebrate but we need to get to work as well."

The program featured several cultural and musical interludes, and the outside of the UNESCO building was lit by Finnish light artist Kari Kola with a display entitled "Light is Here" reflecting the powerful elements of the Northern lights.

Optical technologies for simple lighting, inexpensive eyeglasses, and solar power were among the many and varied applications of light celebrated during the second day of ceremonies. In a well-received and inspiring session on Light Solutions, three presenters described highly successful programs that are making huge improvements in quality of life in several areas of the world. Illac Diaz told how 'A Liter of Light' is using very low technology - a plastic bottle filled with water and chlorine - to create a 55-watt solar bulb powerful enough to light up a home while being environmentally friendly, inexpensive, and easy to make. Martin

"Light is Here" - a light artwork gracing the UNESCO buildng at the ceremony.

Aufmuth described how 'One Dollar Glasses' is changing lives by providing locally manufactured glasses at low cost to some of the approximately 150 million people worldwide who need prescription eyeglasses but cannot afford them - and who may be unable to work to earn money without them. The program also teaches people in the community how to make the glasses, further opening the path out of the cycle of poverty. Linda Wamune explained the 'Sunny Money' program, which provides solar-powered lights and chargers in African communities to enable more hours in the day for activities such as studying. Wamune said that the program is successful in part because the lights are sold rather than given away. People in Africa can afford such small technology devices, she said, and they place more value on what has been purchased, as the perception is that items that are given away are of lesser quality.

Nobel Laureate William Phillips started the day with a dynamic, crowd-pleasing demonstration using liquid nitrogen. Fellow Nobelists Serge Haroche and Zhores Alferov gave thought-provoking and visionary talks - Haroche on how light reveals the quantum nature of physical reality, and Alferov on how heterostructures enable the creation of new structures with unique and superior electrical, optical, and mechanical properties.

Future of Light panellist Sune Svanberg (Lund University) made the audience laugh with a slide explaining the few "simple" steps to winning a Nobel prize. He joined fellow panellists Alain Aspect (UNESCO Niels Bohr Medal Laureate), SPIE Fellow Bernard Kress (Google [X]), and 2014 SPIE Britton Chance Biomedical Optics Award winner Brian Wilson (Ontario Cancer Institute) in describing future applications of light in healthcare, computing and wearable technologies, and research.

A roundtable discussion on science policy moderated by Jose Mariano Gago, Portugal's former Minister of Science, Technology and Innovation, emphasized science as a tool for development. Gago encouraged nations to cooperate and improve the dialogue about science policy at an international level. Science, he said, "can be a source of peace or a source of conflict, a source of war or a source of development. It must rely on knowledge and trust."

Panellist Naledi Pandor, South African Minister of Science and Technology, pointed out a disconnect between Africa and the rest of the world, saying that the continent is often excluded from initiatives that are nominally "global." The continent needs to raise its profile with well-crafted science policy, building human capital in a wide range of disciplines, and making sure researchers have academic freedom and the infrastructure to work, she said.

"Every closing is an opening," observed Maciej Nalecz, UNESCO Director of the Division of Science Policy and Capacity-Building - the closing of IYL 2015 ceremonies are just the beginning of a year full of activities.

Read more: spie.org/x105834.xml