



# NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE • INTERNATIONAL COMMISSION FOR OPTICS

## Working towards ICO-24 in 2017

### Past ICO president Duncan Moore calls for ICO officer nominations.

Next year, the ICO Bureau will be reconstituted through elections by territorial member participation. As past-president of ICO, I assume the chairmanship of the Nominating Committee with three additional members, Maria Calvo, Ari Friberg and one other, as yet to be determined. We will be overseeing the nomination process and the election at the ICO-24 Triennial Congress of the International Commission for Optics in Tokyo, Japan, 22–27 September 2017. Candidates are now sought for the offices of president, secretary, associate secretary, treasurer, and eight elected vice-presidents, of which two must, according to the bylaws, represent industry. There are in addition several vice-presidents appointed by large optics-related societies and professional organizations that are associate members of the ICO Bureau.

A letter requesting nominations has, along with election procedures, already been sent to the Territorial Committees, and an additional letter will be forwarded to remind the territories of their responsibilities. We hope to have a varied list of candidates in place by 28 February 2017, at which time all members will receive information as to the nominated candidates so that they can identify those that they wish to support for any specific office. It should be remembered that nominations for all positions/officers close only 24 hours before the second business meeting of the International Commission for Optics General Assembly in Tokyo.



This is one of the most significant and important activities for ICO members. Their vote, in large measure, will determine the character of the ICO going forward in what our community will consider as important actions to enlarge the presence of optics and photonics all over the world, not restricted to science and technology platforms but also in education, promotion of young researchers and entrepreneurship programmes. Moreover, we need a worldwide distribution of candidates that cover all large areas of optics and photonics.

Your nominations should be emailed to me at [moore@optics.rochester.edu](mailto:moore@optics.rochester.edu). Do not miss this opportunity; we need your voice and ideas.

**Duncan T Moore**  
**ICO Past President, Chair of the ICO**  
**Nomination Committee.**

## Science by Women supports African researchers

### Women for Africa Foundation fellowships are established.

ICFO – The Institute of Photonic Sciences, Castelldefels (Barcelona), Spain, has established a programme with the Women for Africa Foundation.

The Women in Africa Foundation, true to its mission of contributing to the development of Africa through its women, is launching the second edition of the “Science by Women” programme with the aim to promote African women’s leadership in scientific research and technology transfer, and to foster the capacity of the research centres in their home countries. The main goal is to enable African women researchers and scientists to tackle the great challenges faced by Africa through research

in health, agriculture and food security, water, energy and climate change, which can be transferred into products and technologies having an impact on people’s lives.

The programme will fund seven sabbatical fellowships for senior African women researchers to enjoy their stay at seven selected institutes located in Spain. One of those fellowships will be hosted by ICFO.

Details of the call and further information can be found at [www.mujaresporafrica.es/senior-research-fellowships-2016/index.html](http://www.mujaresporafrica.es/senior-research-fellowships-2016/index.html). The deadline for applications is 21 July 2016.

**Silvia Carrasco, PhD, MBA, Knowledge and Technology Transfer (KTT) director ICFO-The Institute of Photonic Sciences.**

# Celebrating a century of light

**The Optical Society reflects on its achievements in the last 100 years.**



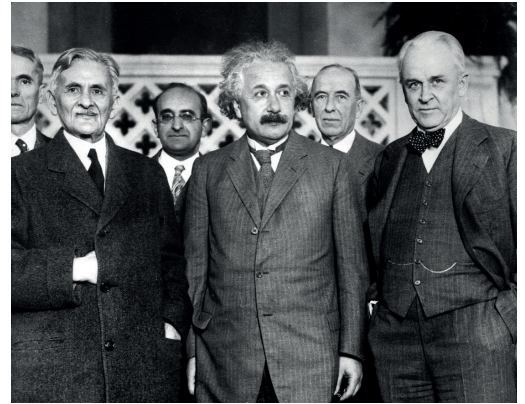
Elsa Garmire, c.1969, patented devices that enhanced optical communications including lasers, waveguides, and detectors. Garmire served as OSA president in 1993. Image credit: OSA Archives.

Since its founding in 1916, 100 years ago, The Optical Society has brought together a global community of scientists, engineers, business leaders, and students whose work in optics and photonics has transformed the world.

“Our Centennial is not only an opportunity to capture the legacy of the Society and the optics field, but also a chance to explore the future of our exciting scientific and technological breakthroughs,” stated Alan E Willner, 2016 president of The Optical Society and Steven and Kathryn Sample, chair in engineering, University of Southern California, California, USA. “Over the past century, there has been a dramatic advance in our understanding of light and the capabilities of our technologies, as well as an explosion in light-enabled applications. Undoubtedly, there remains tremendous potential to address challenges such as supporting health and medicine as well as the continued exponential growth of the Internet. We are only at the beginning of what optics technology can do, and The Optical Society and its members will continue to be at the forefront of advancing the science of light.”

As World War I loomed in Europe, the demand for technological innovations grew increasingly urgent. It was against this backdrop that Perley G Nutting, a scientist at the US Bureau of Standards in Washington, DC, recognized the need for an organized scientific home for optical engineering and technology. After moving to Rochester, New York, to take a position at Eastman Kodak Company, Nutting and other Rochester-area luminaries founded The Optical Society of America (OSA) in 1916 with a focus on advancing applied optics.

“The Optical Society was created in an environment where scientific collaboration was a



At a 1931 meeting, Albert Einstein with honorary OSA members A A Michelson (left) and Robert Millikan (right).

challenge,” said Elizabeth Rogan, CEO of The Optical Society. “Our founders saw the need to bring together the best scientific minds in industry and academia to share ideas in pursuit of technological breakthroughs. Today, The Optical Society serves as a global catalyst for the science of light. We are proud of the scientists and corporate leaders, including 34 Nobel Laureates, who are inspiring the next generation of scientific discovery.”

What follows are a few of the many scientific accomplishments in the Society’s first century.

## **Picturing the future with photography**

In the 1920s, The Optical Society established its first and most prestigious award in honour of Frederic Ives, inventor of modern photoengraving and a pioneer in colour photography, three-colour process printing, and 3D stereoscopic photography. Ives served as OSA president in 1924–1925.

C E K Mees, another luminary, brought numerous advances to scientific photography during a 43-year career at Eastman Kodak, including the development of sensitive photographic emulsions that allowed the capture of astronomical images. An OSA award was named in Mees’ memory in 1961.

Another groundbreaking moment came at a 1947 OSA meeting, when Edwin Land, co-founder of Polaroid, demonstrated his new instant-photography system to the public for the first time.

## **The laser ushers in a new era**

Although Einstein described the principle of stimulated emission in the early 1900s, it wasn’t until 1953 that a device exhibiting this principle was built. That was the year Charles Hard Townes, James Gordon, and H J Ziegler constructed what they called a maser. Today masers are used in atomic clocks, radio tel-



Edwin Land debuts the film for what would become the Polaroid instant camera at a 1947 OSA meeting. Credit: OSA Archives.

DGaO ICO May 2016 Hannover, Germany. From left: Prof. Yasuhiko Arakawa, ICO president; Dr Frank Höller, DGaO chairman; Prof. Monika Sester, vice-president for international affairs/Leibniz University of Hanover; Dr Gabriele Heinen-Kljajić, minister for science and research/Lower Saxony; Prof. Eduard Reithmeier, local host chairman.



escopes, and ground stations communicating with spacecraft.

In 1960, Theodore Maiman developed the ruby laser. His invention, based on theoretical work by Townes and Arthur L Schawlow, fired successfully on the very first try.

“The mid-century discoveries in optics created entirely new fields of discovery and technology applications,” said Dr Gregory Quarles, chief scientist of The Optical Society. “Advanced manufacturing, for example, deploys high-powered lasers to cut and bond materials. The recent discovery of gravitational waves was made possible with laser technology and has opened up a new realm of possible discoveries, forever changing astrophysics.”

#### Connecting the world through light

It wasn't long after the invention of the laser that scientists first began to investigate how it could interact with waveguides, including glass optical fibres. 50 years ago, OSA member Charles K Kao and George Hockham at Standard Telecommunication Laboratories in Harlow, UK, realized that increasing the purity of glass optical fibres could allow the transmission of light signals over a distance of 100 km, about five times farther than the best fibres available at the time. Kao is today known as the “father of fibre optics,” and in 2009 he received a Nobel Prize in Physics for his work.

#### Microscopy reveals the invisible

The advent of the laser and the development of techniques for using fluorescent proteins as tags led to new microscopy methods for watching intricate biological processes such as gene expression, the development of neurons, and the spread of cancer cells. OSA fellow William E Moerner and OSA members Stefan Hell and Eric Betzig built on these advances by developing super-resolution microscopy, a family of techniques that uses laser-excited fluorescence to produce images of single molecules by overcoming the diffraction of the traditional optical microscope. They shared the 2014 Nobel Prize in Chemistry for this work.

#### A bright future for the science of light

100 after its founding, The Optical Society has grown from a small group of luminaries to a diverse worldwide membership of more than 19,000 dedicated to advancing knowledge and applications of optics and photonics. Join our 100th Birthday Bash at Frontiers in Optics, 17–21 October 2016, where we were founded – in Rochester, New York, USA.

- This story was adapted from an article in *Physics Today*.

**Contact: Rebecca Andersen, director of public relations, The Optical Society, email: [randersen@osa.org](mailto:randersen@osa.org), tel: +1 202.416.1443.**

## An educational legacy of the IYL 2015

### Optics kits for Spanish primary and secondary schools.

The first ICO prize for the promotion of optics and photonics was awarded to the Spanish Optical Society (SEDOPTICA) in support of their outreach activities in educational centres. The ICO contribution was intended to help acquire optics kits to be donated to primary and secondary schools.

Right: María del Mar Sánchez, SEDOPTICA member, discussing optics demonstrations with students at the primary school IES – El Palmeral, in Elche, Spain.



The Spanish Optical Society (SEDOPTICA), thanks to an initiative of its Committee on Imaging Techniques, has obtained generous financial support from the International Commission for Optics (ICO).

This support has permitted the purchase of a considerable number of kits to promote optics and photonics for educational centres.

So far, 30 kits have been delivered, and a further dozen will be sent out in the near future. All

the kits acknowledge the ICO sponsorship.

SEDOPTICA is grateful to ICO for their contribution to the promotion of optics and light-based technologies, especially after the recent extremely successful International Year of Light.

- <http://sedopticaphotonickit.blogspot.com.es/>

**Santiago Vallmitjana**  
**President of SEDOPTICA**



Ignacio Moreno, vice-president of SEDOPTICA, with Jesús Carnicer, SEDOPTICA member and pedagogical director of the MUDIC – Museum of Education in Science of Orihuela, where two Photonics Explorer Kits have been included in the material used at the optics workshop.

## Contacts

International Commission for Optics (e-ico.org).

### Bureau members (2014–2017)

**President** Y Arakawa

**Past-president** D T Moore

**Treasurer** J A Harrington

**Secretary** A M Guzmán,  
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[ico.secretariat@gmail.com](mailto:ico.secretariat@gmail.com)

**Associate secretary**

G von Bally

**Vice-presidents, elected**

J Harvey, F Höller, H Michinel,  
J Niemela, R Ramponi, S-H Park,  
J Zakrzewski, M Zghal

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E Rosas, P Urbach, A Wagué,  
M J Yzuel

**IUPAP Council representative**

C Cisneros

**Editor in chief** A M Guzmán

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W T Rhodes, Florida Atlantic  
University; K Baldwin, Australian  
National University, Australia;  
J Dudley, Université de Franche-  
Comté, France



## Forthcoming events with ICO participation

Below is a list of 2015/17 events with ICO participation. For further information, visit the new ICO webpage at <http://e-ico.org/node/103>.

### 25–28 July 2016

**International Symposium “Optics and its Applications” (OPTICS 2016)**

Yerevan-Ashtarak, Armenia  
Contact: Narine Gevorgyan

tel: +37493358613

[gnarine@gmail.com](mailto:gnarine@gmail.com)

<http://rau.am/optics2016/>

### 24–25 August 2016

**2nd International Seminar on Photonics, Optics and its Applications (ISPhOA 2016)**

Legian-Kuta, Indonesia

Contact: Aulia Nasution

tel: +62 821 4226 1063

[isphoa2016@ep.its.ac.id](mailto:isphoa2016@ep.its.ac.id)

[www.isphoa2016.org](http://www.isphoa2016.org)

### 21–25 November 2016

**RIA0-OPTILAS 2016**

Pucon, Chile

Contact: Carlos Saavedra Rubilar

tel: +56 41 2204740

[riao.optilas2016@cefop.udec.cl](mailto:riao.optilas2016@cefop.udec.cl)

<http://riaooptilas.cefop.cl/>

### 26–28 November 2016

**International Conference on Light and Light-based Technologies**

Tezpur, Assam, India

Contact: Pabitra Nath

tel: +913712-275575

[pnath07@gmail.com](mailto:pnath07@gmail.com)

<http://luit.tezu.ernet.in/ici2t>

### 4–7 April 2017

**International Conference on Optical and Photonic Engineering (icOPEN 2017)**

Singapore

Contact: Anand Asundi

tel: +65-67905936

[d-cole@ntu.edu.sg](mailto:d-cole@ntu.edu.sg)

[www.icopen.com.sg/](http://www.icopen.com.sg/)

### 8–12 May 2017

**International Conference on Applications of Optics and Photonics (AOP 2017)**

Faro, Portugal

Contact: Manuel da Costa

tel: +35-1253604070

[president@optica.pt](mailto:president@optica.pt)

[www.optica.pt/aop2017](http://www.optica.pt/aop2017)

### 3–8 September 2017

**24th Congress of the International Commission for Optics (ICO-24)**

Tokyo, Japan

Contact: Yasuhiko Arakawa

tel: +81-3-5452-6245

[arakawa@iis.u-tokyo.ac.jp](mailto:arakawa@iis.u-tokyo.ac.jp)

[www.scj.go.jp/ja/event/ico2017](http://www.scj.go.jp/ja/event/ico2017)

Responsibility for the correctness of the information on this page rests with ICO, the International Commission for Optics; <http://www.e-ico.org/>. *President*: Prof. Yasuhiko Arakawa, Director, Collaborative Institute for Nano & Quantum Information Electronics, University of Tokyo, Japan, [arakawa@iis.u-tokyo.ac.jp](mailto:arakawa@iis.u-tokyo.ac.jp). *Associate Secretary*: Prof. Gert von Bally, Centrum für Biomedizinische Optik und Photonik, Universitätsklinikum Münster, Robert-Koch-Straße 45, 48149 Münster, Germany; [bally@uni-muenster.de](mailto:bally@uni-muenster.de)