

# Report of Affiliated Commission AC.1 for 2017-2018

## Affiliated Commission AC.1: The International Commission for Optics (ICO)

The International Commission for Optics was created in 1947. It is an Affiliated Commission of the International Union of Pure and Applied Physics (IUPAP), and a Scientific Associate of the International Council of Science (ICSU). Its objective is to contribute, on an international basis, to the progress and diffusion of knowledge in the fields of optics and photonics.

The Commission has three categories of members: Territorial Committee Members (53 members including 13 Associate Members), International Organization members (7 members). The governing body of ICO is its General Assembly, usually held every three years during an ICO Congress that includes an international conference on optics and photonics. Between General Assemblies, a Bureau is responsible for the conduct of the Commission. The bureau consists of the President, the Past-President, the Secretary General and the Associate Secretary, the Treasurer, and fifteen Vice-Presidents, (eight elected) of whom at least two are from industry. The bureau was renewed for the period 2017-2020 in the last general assembly celebrated in Tokyo in August 2017. The ICO president for the mentioned period is Prof. Roberta Ramponi from CNR-IFN and Politecnico di Milano (Italy).

In order to serve and be representative of the optics community worldwide, ICO maintains contacts with its Members and with optical scientists in all countries and welcomes all new contacts. Together with the other societies involved, it contributes to the coordination of international activities in optics such as in particular scientific meetings. Scientific awards are also an important ICO activity, some examples are:

Prof. Andrea Alù, Temple Foundation Endowed Professor at the University of Texas at Austin, was awarded the ICO Prize 2016 “for his groundbreaking work on mecatronics for ultrafast electronics and the localization of optical radiation in structured materials”.

Guillermo H Kaufmann, Professor of Physics with the Universidad Nacional de Rosario in Buenos Aires, Argentina, was the recipient of the ICO Galileo Galilei award for 2016. Kaufmann, also Chief Scientist of the Argentinean National Council for Scientific and Technical Research and Head of the Optical Metrology Laboratory at the Instituto de Física Rosario, received the ICO Galileo Galilei award “for the development of novel speckle interferometry techniques and their application in experimental mechanics, materials technology and nondestructive testing”.

Laura Na Liu, Professor at the Kirchhoff Institute of Physics, University of Heidelberg, and Group Leader at the Max-Planck Institute for Intelligent Systems, Germany, is the recipient of the 2016 IUPAP Young Scientist Prize in Optics for “outstanding contributions to nano-optics, nanophotonics, nanoplasmonics, and metamaterials”.

Dr G K Samanta of the Physical Research Laboratory, Ahmedabad, India, was the 2017 recipient of the Galileo Denardo Award. His most exciting work that has drawn great attention among the international community, is the demonstration of optical parametric oscillators producing high-power coherent and tunable optical beam in Airy intensity distribution.

Giulia Grancini was awarded the IUPAP Young Scientist Prize in Optics 2017 for her “deep knowledge on photophysical properties and ultrafast light-induced dynamical processes”. Giulia’s work focuses on the current scientific challenge of exploring the fundamental photophysical processes underlying the operation of advanced materials for optoelectronic application, with special attention to photovoltaics. She contributed with pioneering work to the understanding of the ultrafast interface physics that governs the operation of organic and hybrid perovskite solar cells.

Prof. Nosich was awarded the Galileo Galilei Award 2017 “for his contribution from fundamental mathematical physics studies to the modeling of actual devices for photonics and optoelectronics under comparatively difficult circumstances”. His outstanding contributions were achieved in unfavorable circumstances of Ukraine, which got independence in 1991, and made a decisive choice to join Europe in 2014. The conditions for doing research in Ukraine became hard after its independence in 1991, due to the lack of access to scientific publications, poor internet connection, and scarce funding.

The 2017 ICO Prize was awarded to Prof. Francesca Calegari, University of Hamburg, Germany, “for her innovative and pioneering research on the generation of isolated XUV attosecond pulses at the nJ-energy level and their application to the study of the electron dynamics in complex molecules”. Prof. Calegari received her PhD in Physics in March 2009. From Dec 2011 till Aug 2016 she had a permanent position as a researcher at IFN-CNR, Milan, Italy. From 2013 till 2016 she was professor of Physics at Politecnico di Milano in Milan, Italy. Since August 2016 she is Full Professor of Physics at the University of Hamburg and Leading Scientist at DESY, Hamburg, Germany.

During 2017, the main ICO activity was the celebration of its triannual General Assembly, that took place at the Keio Plaza Hotel in Shinjuku, Tokyo, Japan from 21–25 August 2017. ICO-24 was jointly sponsored by the ICO and the Science Council of Japan (SCJ) and co-sponsored by the Japan Society of Applied Physics (JSAP) and the Optical Society of Japan (OSJ). ICO-24 was also technically co-sponsored by many scientific societies including the Chinese Optical Society (COS), the Chinese Society for Optical Engineering (CSOE), the European Optical Society (EOS), the Foundation for Promotion of Electrical, Electronic and Information Engineering, the IEEE Photonics Society, the Institute of Electronics, Information and Communication Engineers (IEICE), the International Society for Optics and Photonics (SPIE), the Laser Society of Japan (LSJ), the Optical Society (OSA), the Optical Society of Korea (OSK), the Physical Society of Japan (JPS), and the Taiwan Photonics Society (TPS). The total number of participants in ICO-24 was 1003, from more than 40 countries. The Congress program of ICO-24 consisted of the opening ceremony, plenary sessions, technical sessions, the conference reception, the Congress banquet, and the closing session.

Another significant ICO activities and cosponsored events were:

- The Winter College in Optics: “Advanced Optical techniques for Bio-imaging”, 13-24 February 2017 at the ICTP, Trieste, Italy
- OASIS conference in Optics and Electro–Optics, in Tel Aviv and chaired by Abraham Katzir in February 2017.
- SPOF – Sociedade Portuguesa para a Investigação e Desenvolvimento em Óptica e Fotónica, successfully organised its third triennial international conference on Applications of Optics and Photonics, 8–12 May 2017, at the University of Algarve in the lovely city of Faro, Portugal.
- International workshop on Optics and Photonics (IWOP), organized by Dr. Imrana Ashraf, was inaugurated at the Department of Physics Quaid-i-Azam University (QAU), Islamabad, Pakistan on December 11, 2017.
- Winter College on Extreme Non-linear Optics, Attosecond Science and High-field Physics in Trieste, 5-16 February 2018.

The next ICO Executive Board and Bureau meetings will be held in Delft, NL, 6-7 October 2018, in conjunction with the European Optical Society conference EOSAM.18 (Delft, 8-12 October 2018).