

Report of Affiliated Commission AC.1 for 2020

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 an Affiliated Member of the International Science Council (ISC). Its objective is to contribute, on an international basis, to the progress and diffusion of knowledge in the fields of optics and photonics, and to promote related applications.

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, of whom at least two are from industry (eight are elected and seven are appointed by the International Organization members). 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 IFN-CNR (Italy). Following the coronavirus sanitary emergency, 2020 General Assembly and elections were postponed to 2021, and the present Bureau will remain in charge one further year.

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 and photonics such as in particular scientific meetings. Scientific awards are also an important ICO activity, some examples are:

ICO-IUPAP Young Scientist Prize in Optics

In 2005 the International Union of Pure and Applied Physics (IUPAP) created the Young Scientist Prizes for its commissions. The international Commission of Optics (ICO), as an Affiliated Commission of IUPAP, decided in 2008 to adopt the IUPAP Young Scientist Prize in Optics. The IUPAP prize in optics will be awarded annually through ICO to a scientist who has made noteworthy contributions to applied optics and photonics during a maximum of 8 years of research experience after having earned a PhD degree. Career interruptions will not be counted as time of research experience.

The Prize is awarded at a major ICO meeting, where the recipient is expected to deliver an invited presentation and includes:

- The IUPAP Young Scientist Medal with the name and discipline (optics) of the awardee engraved on the back.
- A citation.
- A 1000€ award as established by IUPAP.

Dr. Chao-Yang Lu from Univ. of Science & Technology of China received the ICO-IUPAP Young Scientist Prize in optics 2019 “for significant contributions to optical quantum sciences”.

Dr. Bhavin J. Shastri from Queen's University in Canada received the ICO-IUPAP Young Scientist Prize in optics 2020 “for his pioneering contributions to Neuromorphic Photonics”.

ICO Prize

ICO established in 1982 the ICO Prize, to be given each year to an individual who has made a noteworthy contribution to optics, published submitted for publication before he or she has reached the age of 40. (Specifically, the Prize winner must not have reached the age of 40 before December 31 of the year for which the Prize is awarded). The character of the work of successive Prize recipients should preferably alternate between predominantly experimental or technological and predominantly theoretical. The "noteworthy" contribution in optics is measured chiefly by its impact (past or possibly future) on the field of optics generally, opening a subfield or significantly expanding an established subfield in research or technology.

The Prize includes:

- a citation,
- a cash award of an amount established in the triennial budget of ICO, and the invitation to present an invited paper and receive the award at the next ICO Congress or another ICO meeting mutually agreed to by the bureau and the award winner.

Every year, the ICO Prize Committee issues a call for nominations that is published in the ICO Newsletter, receives the nominations and selects the recipients for approval by the Bureau at its next meeting. The award needs not be made each year if the Prize Committee so chooses. The Prize is preferably given to an individual, but it can be shared by two persons. Eligibility for the Prize is not excluded by previous prizes awarded to the individual. The selected Prize winner is then announced in the ICO Newsletter and, as appropriate, in one or more optics journals. The prize will be presented at the next appropriate major ICO meeting and the Prize winner will be expected to deliver an invited talk at that Meeting. Posters of the Prize are also available under request to ICO Secretariat.

Manuel Guizar-Sicairos, from the Paul Scherrer Institute (Switzerland) has been awarded the 2019 ICO Prize for "seminal contributions to method and algorithm development, and application of coherent lensless imaging, ptychography, x-ray nanotomography, and scanning small-angle x-ray scattering".

Wojciech Wasilewski, from the Center of New Technologies and the Faculty of Physics of the University of Warsaw (Poland) has been awarded the 2020 ICO Prize for "seminal contributions to experimental work in the field of multi-mode quantum memories, demonstrating systems with both outstanding storage capacity and remarkably extensive range of operations".

Galileo Galilei Medal

Prof. Malik Maaza from South Africa was awarded the Galileo Galilei Award 2019 "for extensive contributions to the frontiers of interdisciplinary research that involved both theoretical and experimental developments in the fundamental aspects of femtosecond laser-matter interactions under comparatively difficult circumstances".

Prof. Jorge Ojeda-Castañeda from Universidad de Guanajuato in Mexico, was awarded the Galileo Galilei Award 2019 "for his elegant insightful contributions in the development of phase-space analysis, self-imaging and diffractionless beams, pioneering groundwork for computational imaging, for discovering class of functions providing extended depth-of-field, and for designing nonconventional devices employing varifocal lenses under significantly unfavorable circumstances".

Gallieno Denardo Award in cooperation with ICTP at Trieste

In 2019 the award is shared by two researchers: Muhammad Faryad of Lahore University of Management Sciences (LUMS) in Pakistan, and Christian Tomas Schmiegelow of the Universidad de Buenos Aires in Argentina.

The award for Faryad cites “his contributions to the understanding of light interaction with nanostructured materials, and applications in the area of optical surface waves, solar cells, optical metamaterials and the modelling of wave propagation in the nanostructured mediums.”

Schmiegelow received the ICO/ICTP Prize for “his contributions to the field of quantum optics and light-matter interaction, and in particular the demonstration of transfer of optical orbital momentum to bound electrons and studies on interaction of twisted light with trapped ions.”

Dr. Kok Sing Lim has been recognized with the ICO/ICTP Prize 2020 "for his achievements in the field of optical fibre sensing and optical communications, and his substantial contributions to sustainable development in Malaysia through promoting the use of optics-based technologies in the industrial sector."

Other significant ICO primary and cosponsored activities are Conferences and Topical Meetings:

- 4–7 September 2019
Optisud: ICO-IUPAP-C17 Meeting on Optics & Applications to Sustainable Development
Carthage, Tunisia
- 20–24 September 2020
Optics 2019: 7th International Symposium on Optics & its applications
Yerevan-Ashtarak, Armenia
- 23–27 September 2019
RIO-OPTILAS-MOPM 2019 Iberoamerican optics meeting
Cancún, Mexico
- 19-22 October 2019
ICOL 2019: International conference on Optics and Electro-Optics
Dehradun, India
- 10-21 February 2020
Winter College on Optics: Quantum Photonics and Information
Trieste, Italy
- 07–11 September 2020
EOSAM-2020: Annual Meeting of the European Optical Society
Porto, Portugal (online Conference)

2021 Planned Conferences:

- 13 September–17 September 2021
16th Conference of the International Society on Optics within Life Sciences
Dresden, Germany
- 13 September–17 September 2021
25th General Congress of the International Commission for Optics
Dresden, Germany
Together with the General Assembly and Elections