



# NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE · INTERNATIONAL COMMISSION FOR OPTICS

## A message from the new ICO President

**“Let’s give our young people a brighter future”.**



John Howell from the Hebrew University of Jerusalem has been elected president of the ICO for the term 2021-2024.

**There is a famous,** perhaps infamous, expression of unknown origin, “May you live in interesting times”. We definitely live in “interesting times”. We have witnessed some remarkable breakthroughs resulting from the use of light. The international LIGO collaboration’s detection of gravity waves, diagnostic tools, augmented and virtual reality, integrated optics, metamaterials, opto-mechanics, ultra-precise optical gyroscopes etc. have all had a tremendous impact on science and society. On the other hand, we have also experienced “interesting times” in that we have endured a devastating pandemic, witnessed the fruits of unchecked human-caused climate change, and watched as precious water resources have deteriorated to name a few. At the International Commission for Optics, we believe that optics and photonics can provide many applications and opportunities that will aid in improving our lives and providing solutions for some of our most challenging problems. We further believe that young people are eager to engage in solutions to some of our greatest difficulties.

Our vision at the ICO is to promote optics and photonics throughout the world, especially for solving global problems, develop collaborations across the numerous global divides and engage young people in generating solutions.

Let me share some personal thoughts on climate change, a topic that has weighed heavily on my mind over the last several years. In a recent global survey led by Bath University, 10,000 young people between the ages of 16 and 25 were asked about the effects of climate change

on their lives. From the BBC article reporting the survey, we read, “Three-quarters of them said they thought the future was frightening. Over half (56%) say they think humanity is doomed. Two-thirds reported feeling sad, afraid and anxious. Many felt fear, anger, despair, grief and shame - as well as hope. One 16-year-old said: ‘It’s different for young people - for us, the destruction of the planet is personal’... Many feel betrayed, ignored and abandoned by politicians and adults.” In addition to promoting conservation and energy sustainability, it is our belief at the ICO that we should be empowering young people to face these challenges.

It is clear that the Earth is heating up. The atmosphere has some important spectral transmission regions of the light spectrum where light passes through the atmosphere. The two most important windows are the visible and long-wave infra-red. Through the window in the visible light spectrum, light from the Sun is able to come to the surface of the Earth. Through the long-wave infra-red window, light (we can’t see, but which a thermal camera can) from the Earth exits to space. As we produce greenhouse gases, such as carbon dioxide and methane, we are, as it were, “shutting the window” for Earth’s light energy to escape, causing net heating. The increased heat is putting more water vapor into the atmosphere which further shuts the window. In an effort to be brief, to see what happens in an atmosphere of CO<sub>2</sub>, we have only to look at the different night and day temperatures of our celestial neighbors Mercury and Venus.

So, what are some **optical and photonic solutions** to climate change? Besides reducing our consumption through more efficient energy use, one partial solution is international collaboration in photovoltaics to increase efficiency and longevity (thus reducing waste), while reducing cost. This could have a tremendous impact on the future of our planet. Further, cooling demands are increasing rapidly throughout the world. Improvements in photonic structures and paints that promote passive cooling can dramatically reduce cooling needs and costs throughout the world as well as help conserve and even supplement precious water resources.

Climate change is a big concern, but only one of the global issues facing us. At the ICO, we will be initiating challenges to young researchers called, "Optics for a Better World" as well as giving awards to groups and researchers who are using optics to solve global problems. Lastly, we call upon governments, industry and individuals to promote conservation and dramatically increase sustainable energy alternatives to fossil fuels. Let's give our young people a brighter future.

**Prof. John Howell**  
President of the ICO

## ICO26 to be celebrated in Dakar

**For the first time in ICO history, the General Congress will be held in Africa!**



View of King Fahd Palace Hotel & Conference Center, venue of ICO-26 in Dakar, Senegal.

The "Ghana/West Africa" ICO territory together with the African Laser Atomic Molecular and Optical Science Network (LAM), and the French ICO territory have joined forces to organize the next ICO General Congress, ICO-26, in 2024, in Dakar, a self-evident destination. The "Senegalese model" is a term often used to point out its political stability. This stability, combined with the ever-growing quality of the infrastructure, makes Dakar a famous destination for business and tourism: each year, over one million tourists discover the cultural heritage, landscapes, and wildlife of Senegal. With visa exemption and direct flights from most countries and continents, Dakar encourages a world-wide participation. A meeting in Dakar is also a call for African scientists participation, especially students.

International seminars and congresses are held in Dakar throughout the year. ICO together with ICTP, OSA, SPIE, IUPAP and ISP have already sponsored meetings in Africa, organized by the LAM Network such as:

- ICO Topical Meeting, "Optical Sciences and Applications for Sustainable Development", April 2000.

- International Conference on "Optics & Lasers in Science and Technology for Sustainable Development", Jan. 2010.

- International Workshop "Optics, Photonics, and Lasers in Science and Technology for Sustainable Development, launching of the African Optics and Photonics Society", January 2014.

For ICO-26, we have selected a conference center ideally located in Dakar downtown. All range of accommodation in the vicinity of the center is available to suit all budgets. This 26th edition of the ICO General Congress, is an opportunity to highlight the African scientific advances and to further develop optic research, outreach, and industry in Africa. An industrial and educational exhibition will be held during ICO-26. ICO-26 is thus an incomparable occasion to further link the international communities and an additional opening for young African scientists.

As always during ICO general congresses, a strong emphasis will be set on the opportunities for exchange and networking. In addition to convivial moments such as lunches and conference dinner, visits of cultural and touristic spots in the vicinity of Dakar will lend themselves remarkably well to these exchanges.

**Ahmadou Wagué & Gilles Paulliat**  
Co-Chairs of ICO-26

# EOSAM 2021 took place in Rome

**EOSAM is the European yearly event that brings together the photonics community.**



The ICO Secretary, Humberto Michinel, delivers one of the student prizes sponsored by the ICO at EOSAM 2021.

This year, EOSAM was held on Sept. 13-17 in Rome Italy. EOS organized it in close co-operation with the Societat di Ottica e Fotonica, SIOF, the Italian optical society Branch member of EOS, and the Universita di Roma La Sapienza. For the first time, EOSAM was held in a hybrid format, successfully mixing on-line attendees with on-site participants. With over 350 on-site attendees and 180 on-line attendees, from 33 countries worldwide, this hybrid format was a full success and worth to be repeated in the future!

On-site participants benefited from an exceptional venue. The meeting was held in the premises of Universita di Roma La Sapienza, in the center of Roma. The conference rooms surrounded the old cloister open onto an inner courtyard. The cloister arcades welcomed an industrial exhibit of 14 booths, the poster sessions, the welcome reception, the numerous coffee breaks, and the everyday lunches. EOS indeed pays a special attention to the interaction between participants by promoting networking opportunities. One of the nicest was the memorable gala dinner served in the century-old rooms of the Centro Palazzo Rospigliosi. The opening ceremony started with the ICO award ceremony. The Prize winner,

M. Guizar-Sicairos, gave the exciting plenary talk “Harnessing coherence and computational imaging for nanoscale structure characterization using X-rays.” Several student prizes, corresponding to different Topical Meetings, were also awarded during the closing ceremony. The best student presentation sponsored by ICO corresponded to the talk “Sub-light-cycle control of relativistic plasma-mirrors” by Marie Ouillé (Laboratoire d’Optique Appliquée)

The quality of the conference was served by the high level of the scientific presentations, 445 in total. EOS would like to give special thanks to the local EOSAM chairs, Concita Sibilina and Alessandro Belardini, the Topical meeting chairs, and all the attendees who contributed to such a friendly and warm atmosphere. EOS also deeply thanks the EOSAM 2021 sponsors who greatly contributed to the quality of the meeting: Optoprime, Fastlite, NKT Photonics, Toptica Photonics, Optoman, Fluence Technology, Activefiber Systems, American Elements, A.P.E, GLOPhotonics, Bühler, ICO, Nikon, RhySearch, SIOF, Trumpf, UniNe, Zurich Instrument, FemtoEasy, Thor-labs, WZWOpticag, Layertec, Evatec, and Zeiss.

**Gilles Paulliat**  
**EOS President**



Gilles Paulliat, EOS President, delivers the ICO Prize to Manuel Guizar-Sicairos during the ceremonial session at EOSAM 2021.

# New ICO Bureau for the term 2021-2024

**The ICO Bureau was voted online for the first time**



Prof. Yasuhiko Arakawa chaired the ICO Nominating Committee and organized the ICO Bureau online vote

The new ICO Bureau for the term 2021-2024 was elected last 13<sup>th</sup> September. For the first time, the voting was made using an electronic system instead of during the traditionally face-to-face ICO General Meeting. In addition to the President, Secretary, Treasurer and Associate Secretary, eight Vice-Presidents were elected. On 20<sup>th</sup> October the new bureau met online and make some important decisions as nominating the new chairpersons for the ICO committees., who are: Prof. Leszek Sirko for the ICO award committee, Eric Rosas for the Regional Development in Optics committee, Dr. Gilles Pauliat ICO-IUPAP Young Scientist Prize in Optics committee and Prof. Nathalie Westbrook for the Gallieno Denardo Award committee. In addition, the winners of the 2021 ICO awards were announced. The ICO Prize 2021 has been given to Prof. Bo

Zhen (University of Pennsylvania, US), “for his pioneering research on optical bound states in the continuum, exceptional points, and other topological states in photonics”. The ICO-IUPAP Young Scientist Prize in Optics has been awarded to Giulia Fulvia Mancini, University of Pavia, Italy, “for contributions to imaging and scattering of nanostructured materials using high-harmonic soft X-ray sources and research on extreme ultraviolet imaging” and the Galileo Galilei Medal Award 2021 has been given Prof. Dr. Victor Ivanovich Balykin from the Dept. of Laser Spectroscopy, Institute of Spectroscopy, Troitsk, Russia for “his outstanding contributions to the laser cooling, trapping, control and manipulation of the mechanical motion of atoms”.

**Humberto Michinel**  
ICO Secretary General

ICO Bureau for the term 2021-2024		
President	John Howell	Hebrew University of Jerusalem, Israel
Past-President	Roberta Ramponi	Politecnico di Milano, Italy
Secretary General	Humberto Michinel	Universidade de Vigo, Spain
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Elected Vice-President	Kaoru Minoshima	The University of Electro-Communications, Japan
Elected Vice-President	Sara Otero	Radiantis, Spain
Elected Vice-President	Leszek Sirko	Polish Academy of Sciences, Poland
Elected Vice-President	Nathalie Westbrook	Institut d'Optique Graduate School, France
Appointed Vice-President	Gert von Bally	Appointed by OWLS
Appointed Vice-President	Kent D. Choquette	Appointed by IEEE Photonics Society
Appointed Vice-President	Yaseera Ismail	Appointed by OPTICA
Appointed Vice-President	Carmina Londoño	Appointed by SPIE
Appointed Vice-President	Gilles Pauliat	Appointed by EOS
Appointed Vice-President	Eric Rosas	Appointed by RIAO
Appointed Vice-President	Ahmadou Wagué	Appointed by LAM network
IUPAP Delegate	Carmen Cisneros	Appointed by IUPAP

# Pyotr Lebedev and the Lebedev Physical Institute

This year marks 155 anniversary of Prof. Pyotr Lebedev.



Pyotr Lebedev (1866) was one of the most outstanding Russian scientists.

Pyotr Lebedev organized for the first time in Russia the collective scientific work in physics within big scientific laboratories, a model that became the basis for scientific institutions in Russia in the first part of the 20th century. He is also well known for proving the existence of light pressure (predicted by Maxwell and Bartoli) by measuring its action on solids in 1899. After Lebedev's talk at the Congrès Internationale de Physique in Paris in 1900 Lord Kelvin said "Maybe you know that all my life I struggled against Maxwell not admitting his light pressure, and now your Lebedev make me give up in front of his experiments." For these experiments, Lebedev was nominated for the Nobel Prize in Physics in 1905 and 1912, but died at the beginning of 1912, at the age of 46, before he could be awarded. Nowadays, unfortunately, there is a tendency in the scientific literature worldwide, including encyclopedia entries, where Lebedev's name is often never mentioned. This issue is discussed in detail in our recent paper in Contemporary Physics of 24 Aug. 2021 in which we (i) outlined the history of the first measurements of light pressure (ii) described Lebedev's education and key scientific achievements; (iii) covered the history of the Lebedev Physical Institute (LPI) and its key scientific achievements.

In November 2019, the LPI in Moscow, in its modern form founded by a member of Lebedev's laboratory S.I. Vavilov, celebrated its 85th anniversary although its roots trace back to the first physics laboratory in Russia in the first quarter of the 18th century. Seven Nobel laureates used to work at LPI – Cherenkov, Frank, Tamm (Physics, 1958) for the Vavilov-Cherenkov effect (Vavilov with his decisive contribution to this discovery was not alive at this time); Basov and Prokhorov (Physics, 1964) for fundamental work in the field of quantum electronics, which has led to the construction of oscillators and amplifiers based on the maser-laser principle; Ginzburg (2003, Physics) for pioneering contributions to the theory of superconductors and superfluids; Sakharov (1975, for Peace). L.I. Mandelstam, named "the forefather", established the Moscow School of Theoretical Physics and Optics in the second quarter of the 20th century. Landsberg and L.I. Mandelstam observed the satellite lines of visible light from the lattice vibrations in quartz and Iceland spar on February 23–24, 1928, one week earlier than Raman, but published the results almost three months after his account.

**S.G. Lukishova, A.V. Masalov  
and V.N. Zadkov**



*S. G. Lukishova is with the University of Rochester, USA; A. V. Masalov and V. N. Zadkov are with the Russian Academy of Sciences, Russia. The image shows a bust of Pyotr Lebedev in front of the façade of the Lebedev Physical Institute.*

# International Conference in Correlation Optics

The conference has been held in Chernivtsi, Ukraine.



Prof. Oleg Agelsky chaired the international Conference in Correlation Optics celebrated from 13<sup>th</sup> till 16<sup>th</sup> September, 2021.

The conference program has included 26 invited talks, 23 regular orals and 107 posters, as well as 3 Invited lectures for students. The reports were presented by about 120 researchers from 20 countries: UK, USA, Canada, Germany, France, Denmark, Japan, Australia, Poland, Romania, Norway, Czech Republic, China, Spain, South Korea, Portugal, India, Kazakhstan and Ukraine. Due to the situation of the pandemic (COVID-19) and in order to avoid any risks for participants, the 15th International Conference “Correlation Optics 2021” was held into a fully ONLINE on Zoom platform.

Topics covered were: Singular optics; Informative content of statistical optical fields, including optical chaos, polarization optics and coherence; Optical correlation devices based on diffractive optical elements, including optical and digital holography, fractal optics, optical sensors; Optical correlation diagnostics, interferometry and microscopy of rough surfaces and random media; New applications of correlation optics in biology and medicine; Advanced materials, nanomaterials and devices for optics and optoelectronics.

**Prof. Oleg Agelsky**  
Chair of the conference

## Contacts

International Commission for Optics (<http://e-ico.org>).

**Bureau members (2021–2024)**

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**Secretary** H Michinel,

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S Otero, L Sirko, N Westbrook

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Y Ismail, C Londoño,

G Pauliat, E Rosas, A Wagué,

**IUPAP Council representative**

C Cisneros

**Editor in chief** H Michinel

**Editorial committee**

J Harvey, University of  
Auckland, New Zealand;

J Baldwin, Australian National  
University, Australia;

J Dudley, Université Franche-  
Comté, France



## Forthcoming events with ICO participation

Below is a list of forthcoming events with ICO participation. For further information, visit their official websites listed below.

### 18–22 July 2022

#### **AOP2022: V International Conference on Applications in Optics and Photonics**

Guimarães, Portugal

Contact: Prof. Manuel Costa

[info@aop2021.org](mailto:info@aop2021.org)

<https://aop2022.org/>

### 5-9 September 2022

#### **OWLS-16: 16<sup>th</sup> International Conference on Optics within Life Sciences**

Dresden, Germany

Contact: Prof. Alexander Heisterkamp

[ico25@intercom.de](mailto:ico25@intercom.de)

<https://ico25.org>

### 5-9 September 2022

#### **25<sup>th</sup> Congress of the International Commission for Optics**

Dresden, Germany

Contact: Prof. Jürgen Czarske

[ico25@intercom.de](mailto:ico25@intercom.de)

<https://ico25.org>

### 21-25 November 2022

#### **XI Iberoamerican Optics Meeting/XIV Latinamerican Meeting on Optics, Lasers and Applications**

Costa Rica

Contact: Prof Manuel Costa

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

<https://riao-optilas-2022.org>

Responsibility for the correctness of the information on this page rests with the International Commission for Optics (ICO); <http://www.e-ico.org/>. **President:** Prof. John C Howell, Hebrew University of Jerusalem, Israel; [john.howell@mail.huji.ac.il](mailto:john.howell@mail.huji.ac.il) **Treasurer:** Prof. Joseph Niemela, International Center for Theoretical Physics, Italy; [niemela@ictp.it](mailto:niemela@ictp.it). **Secretary:** Prof. Humberto Michinel, Universidade de Vigo, Spain; [secretariat@e-ico.org](mailto:secretariat@e-ico.org).