



# NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE • INTERNATIONAL COMMISSION FOR OPTICS

## ICO-24 attracts more than 1000 participants

**The opening ceremony was attended by the Emperor and Empress of Japan.**



Prof. Yasuhiko Arakawa, ICO president and chair of ICO-24, delivering his speech.

ICO Bureau Members and officers and staff members of SPIE and OSA. To the right of ICO past-president Maria L Calvo stands IUPAP's president Bruce McKellar.

The first Congress of the ICO (ICO-1) was held in Delft, the Netherlands, in July 1948 with the aim of providing a forum to discuss progress in optics and photonics. Since then, the ICO Congress has been held every three years, and gained participation from all over the world including developing countries. The 24th Congress of the International Commission for Optics (ICO-24) took place at the Keio Plaza Hotel in Shinjuku, Tokyo, Japan from 21–25 August 2017. ICO-24 is the second to be held in Japan, 34 years since ICO-13 was held in Sapporo. It is a great honour for the ICO territorial committee of Japan to have hosted the ICO Congress in its country again.

Tokyo Metropolitan is the capital of Japan with a population of 13 million. Shinjuku is one of the busiest areas, having a big terminal station with the most passengers and many department stores. The Keio Plaza Hotel is located close to the Shinjuku railway station. Tokyo is soon to host the 2020 Olympic Games.

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 main theme of ICO-24 was “Light for Society”, emphasizing the role of optics and photonics in the further development and innovation of optical networks and optical information technologies for advanced information technology and artificial intelligence, as well as their great potential to contribute to solving issues on global energy and the environment and to provide advanced tools for medicine.

The total number of participants in ICO-24 was 1003, from more than 40 countries. The Congress programme of ICO-24 consisted of the opening ceremony, plenary sessions, technical sessions, the conference reception, the Congress banquet, and the closing session. The most important event for the ICO, its triennial General Assembly also took place during ICO-24.

### Opening ceremony

The most commemorative highlight of ICO-24 was the opening ceremony that was held immediately after the first Plenary Session in the afternoon of 21 August. It is our great honour that the opening ceremony was attended by their Majesties the Emperor and Empress of Japan. I believe that ICO-24 has been the only ICO congress ever attended by a royal family. The Japanese Emperor and Empress attend only one international scientific conference a year. ICO-24 was greatly honoured when selected as the international conference in 2017 to be honoured with their presence. A deep understanding of the fact that optics and photonics will play an important role in a wide range of scientific and engineering fields enabled the presence of the Emperor and Empress.

With the presence of the Emperor and Empress, I, as the ICO president, delivered the opening speech, which was followed by the speeches of Prof. Takashi Ohnishi, the SCJ president, and Dr Kennedy Reed, the IUPAP president-designate. The ceremony was also attended by special guests, Masashi Matsuy-





Prof. Yasuhiko Arakawa and Prof. Martin Booth at the ICO award ceremony.

ama, the Minister of State for Science and Technology Policy, Yuriko Koike, the Governor of Tokyo Metropolitan, and Makoto Gonokami, president of The University of Tokyo. The message from Shinzo Abe, the Prime Minister was introduced by Prof. Yukari Matsuo, the ceremony chair. Everything was prepared under strict security for the opening ceremony, which gave extremely fascinating and significant impact to all the participants to the ICO-24. For organizing and steering the opening ceremony, the full co-operation and support by the Keio Plaza Hotel was indispensable.

The news of the opening ceremony was immediately broadcasted by Japan's major TV channels. As a result, I think that the name of ICO was well recognized throughout Japan. This moving is of great significance for the future progress in light science and technology promoted by the ICO.

### Technical presentation

Two plenary sessions were held, in the afternoon of Monday 21 August and in the morning of Wednesday 23 August. At the first plenary session, a Nobel laureate, Prof. Hiroshi Amano, Nagoya University, Prof. Anne L'Huillier, Lund University, and another Nobel laureate, Prof. Takaaki Kajita, The University of Tokyo delivered plenary speeches on "New era of LEDs", "From extreme nonlinear optics to ultrafast atomic physics", and "30 years of neutrino researches in Kamioka", respectively. At the second plenary session, Prof. Christopher Dainty, University College London, and Prof. James G Fujimoto, Massachusetts Institute of Technology talked about "Fundamental limits of mobile phone cameras" and "Optical coherence tomography and biomedical imaging".

683 papers, including 18 keynote papers and about 100 invited papers, were presented at oral or poster sessions. At ICO-24, 18 research areas were categorized and the contribution of technical papers was solicited in these areas. More than 650 papers were submitted, and those papers were carefully reviewed and selected by the programme sub-committees of the 18 areas. As a result, 13 countries presented more than 10 papers. The 13 countries are Japan, China, Taiwan, Mexico, USA, Germany, Korea, Spain, Russia, UK, France and India. About 10 parallel sessions were always running. Every session room was crowded with a large number of audiences with active presentations and debates.

The 18 areas categorized were the following - 1: optical design, optical materials, and photo lithography; 2: vision, colour, display and lighting; 3: optical metrology; 4: optical imaging and optical information processing; 5: advanced microscopy and spectroscopy; 6: biomedical optics/photronics; 7: nonlinear optics; 8: ultrafast phenomena and ultrafast optics; 9: high-power lasers and applications;



OSA/SPIE student awardees at ICO-24.



ICO-24 General Assembly, presided by Yasuhiko Arakawa.

10: X-ray and high-energy optics; 11: microwave/millimeter-wave/THz photonics; 12: near-field optics, plasmonics, and metamaterials; 13: photonic crystal, nano structures and functions; 14: optoelectronics and photonic devices; 15: optical MEMS and micro-optics; 16: quantum optics and atom optics; 17: fibre optics; and 18: optical communications and photonic network.

### Award presentations and support to participation

The ICO-24 planned to support travelling and accommodation expenses to the presenters or Bureau members from developing countries. 12 participants received the support from ICO-24 with the registration fee waived. In addition, OSA provided support for travel expenses for 3 people.

The OSA/SPIE student awards were given to 18 students who presented excellent papers at the ICO-24 technical sessions. The recipients were selected from each category by the ICO technical programme committee members. The awards were sponsored by OSA, SPIE, as well as by the ICO. The winners, who received certificates at each technical session, were also invited to the banquet.

At the awards ceremony, which took place on 23 August, just before the Congress banquet, the ICO Prize 2014 was presented to Prof. Martin Booth, UK, and the ICO Galileo Galilei Award 2015 was presented to Prof. Aram Papoyan, Armenia. Both gave technical presentations on their achievements on the awards.



Eight Japanese Geisha performed during the Congress banquet.

### General Assembly

The General Assembly was organized in two sessions during ICO-24. Session 1 was held on Tuesday 22 August, 2.00–5.00 p.m., and Session 2 was on Thursday 24 August, 5.00–7.00 p.m. About 65 delegates from about 29 countries and 7 international societies participated in the General Assembly.

At the first session, the ICO president for 2014–2017 presented his report, including the ICO application to become an ICSU Union and the ICO Strategic Plan 2017–2023. The General Assembly debated and approved the ICO Strategic Plan. The preliminary list of nominees for the ICO bureau election was presented by the ICO past-president and chair of the ICO Nomination Committee, Prof. Duncan Moore, who



Prof. Maria L Calvo delivers a celebration speech as former ICO president at the ICO-24 banquet.

also explained the process of late nominations. At the second session, the main agenda of the meeting was the election of ICO Bureau Members for the term 2017–2020. Prof. Juergen Czar-ske, Dresden Technical University Dresden, Dresden, Germany, presented Germany's bid to host ICO-25, which was very well received and unanimously approved by the General Assembly.

### Congress Banquet

The Congress banquet was held at Keio Plaza on the evening of 24 August. Participants entered the banquet room with the welcome of eight Japanese Geisha, who danced and sang for 15 minutes. After the cultural performance, I gave a welcome speech as the ICO-24 Organizing Committee Chair, and Prof. Maria L Calvo delivered a celebration speech as former ICO president. The meal was started with a toast by Prof. Junpei Tsujiuchi, former ICO president. Meanwhile, eight winners of the OSA/SPIE student awards were invited to the stage and introduced. I am convinced that such an introduction became a very honourable memory for the young award winners. After this introduction, the Geisha played a traditional Japanese game together with the participants, who thoroughly enjoyed it. Closing remarks were given by Prof. Juergen Czar-ske, on behalf of the organizers, announcing that ICO-25 will be held in Dresden, Germany, encouraging all the attendees to participate in ICO-25.

### Conclusion

We are pleased to have successfully held ICO-24 in Tokyo, thanks to the strong support by the ICO Bureau members and each territorial committee, as well as international societies. I believe that ICO-24 has become one of the most commemorative ICO Congress in the whole history of the ICO. Finally, I would like to express my thanks to all Japanese colleagues and committee members who contributed to organization, preparation, and execution of ICO-24 in Tokyo.

**Professor Yasuhiko Arakawa, ICO president and chair of ICO-24**

2017–2020 ICO Bureau members		
Position	Name	ICO member
President	Prof. Roberto Ramponi	Italy
Past-president	Prof. Yasuhiko Arakawa	Japan
Secretary	Prof. Dr Humberto Michinel	Spain
Associate secretary	Dr Frank Höller	Germany
Treasurer	Prof. Joseph Niemela	USA
Elected Vice-presidents <small>Those in industry are marked with *</small>	Prof. Qihuang Gong	China
	Prof. Seung-Han Park	Korea
	Prof. John Harvey*	New Zealand
	Prof. Leszek Sirko	Poland
	Prof. Nataliya Kundikova	Russia
	Dr Sara Otero*	Spain
	Prof. Mourad Zghal	Tunisia
	Prof. Adrian Podoleanu	UK
	Prof. Dr Paul Urbach	EOS
Appointed Vice-presidents	Prof. Kent Choquette	IEEE
	Prof. Ahmadou Wagué	LAM Network
	Prof. John Howell	OSA
	Prof. Gert von Bally	OWLS
	Prof. Eric Rosas	RIAO
	Dr Carmiña Londoño	SPIE
	IUPAP Exec. Council delegate	Prof. Carmen Cisneros

# IUPAP Young Scientist Prize 2017 awarded to G Grancini

École Polytechnique  
Fédérale de Lausanne,  
Switzerland.



Giulia Grancini is Team Leader at the École Polytechnique Fédérale de Lausanne (EPFL) – Energypolis, currently based in Sion (Valais, Switzerland). She graduated from Politecnico of Milan in 2008 (MS in physical engineering). In 2012, she obtained her PhD in physics cum laude from the Politecnico of Milan with an experimental thesis focused on the realization of a new femtosecond microscope for mapping the ultrafast phenomena at organic interfaces (see scheme in figure below). During the PhD, she worked as a visiting scientist for one year at the physics department of Oxford University, where she pioneered new concepts within polymer/oxide solar cell technology.

From 2012–2015, she has been a postdoctoral researcher at the Italian Institute of Technology (CNST@PoliMi) in Milan. In 2015 she joined the group of Prof. Nazeeruddin at EPFL, awarded with a Marie Skłodowska-Curie Fellowship. For her seminal contributions in the field of photophysics of hybrid perovskites, she received in October 2015, the prestigious National Award for Physics “EDISON, in memoria di Francesco Somaini” from the Edison Company & Alessandro Volta Foundation. Since 2016, she leads the PhysicsSolarLab at EPFL, aiming to address the fundamental physics behind advanced photovoltaic devices. In 2017, she was awarded with the Swiss Ambizione Energy Grant, which provides independent young researchers with up to 1 million CHF for leading innovative projects in the energy sector. Currently, she is also principal investigator of an European LaserLab project

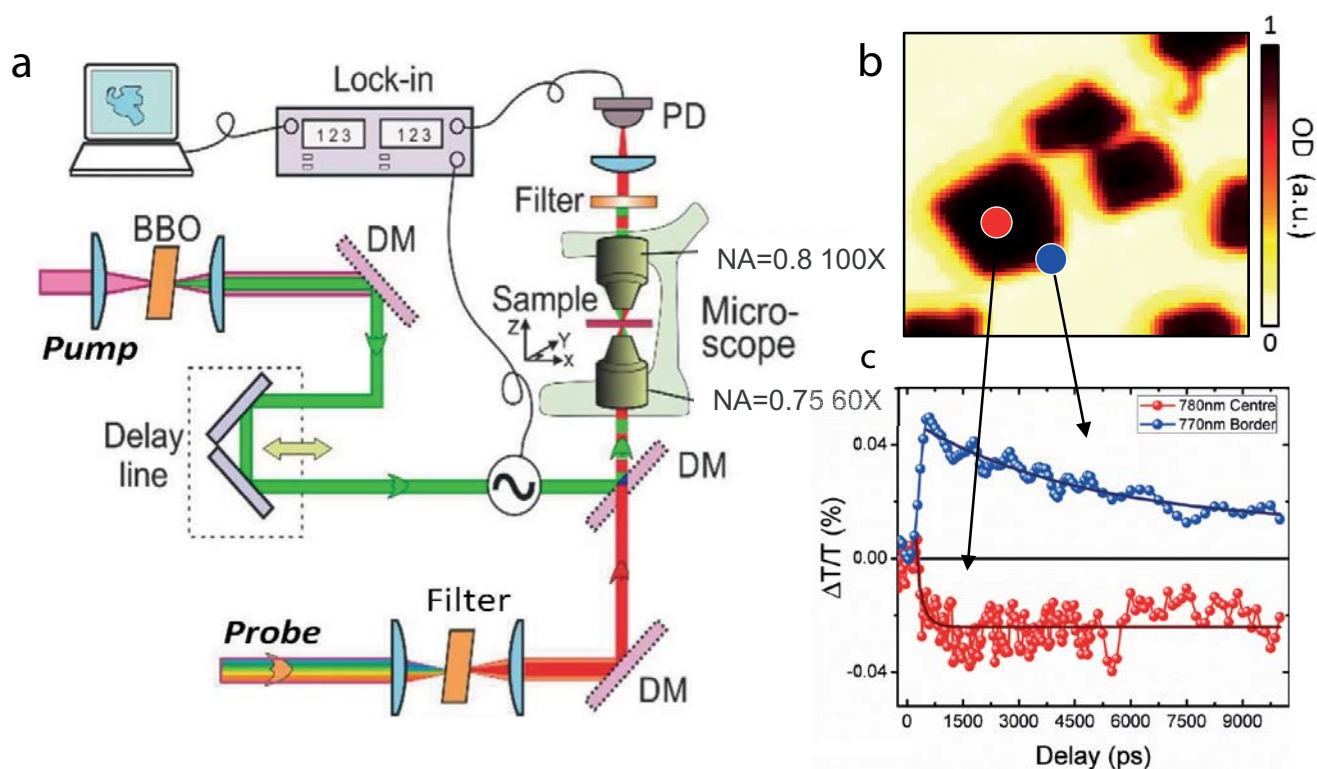
and co-manager of different Swiss projects with academic and industrial partners. She is author of more than 60 peer-reviewed scientific papers including a few in high-impact journals (more than 6000 overall citations) on the photophysical and optical properties of nano-structured semiconductors.

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. Examples include the visualization of the charge transfer and exciton dissociation dynamics involved in the photovoltaic action by developing state-of-the-art sub-10 fs ultrafast spectroscopy systems and the determination of the nature of the photoexcited species in hybrid perovskites and their dynamical evolution in the femtosecond/nanosecond timescale. Her works have been highly cited and recognized by the research community to be of utmost importance for guiding the development of efficient new generation solar technologies.

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”.

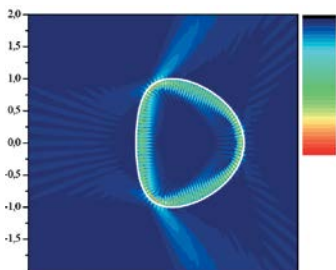
• For more information, visit <https://people.epfl.ch/giulia.grancini?lang=en>.

(a) Scheme of the in-house developed femtosecond microscope. (b) Linear absorption image of micrometre-size  $\text{CH}_3\text{NH}_3\text{PbI}_3$  crystals. Two spots are highlighted where the ultrafast dynamics differ due to the local variation in crystal structure.



# Alexander Nosich receives the ICO Galileo Galilei Award

**Head of the Laboratory of Micro and Nano Optics, National Academy of Sciences of Ukraine.**



A microcavity laser developed at Prof. Nosich's laboratory.

Professor Alexander I Nosich was born in 1953 in Kharkiv, the second-largest city of Ukraine. He received his combined BSc and MSc, his PhD and his DSc in radio physics from the Kharkiv National University, a highly reputed university established in 1804.

In 1979, he joined the Institute of Radio Physics and Electronics of the National Academy of Sciences of Ukraine (IRE NASU) in Kharkiv, major Ukrainian research and development centre for science and applications of microwaves, millimetre waves and sub-millimetre waves. Currently, he is professor, principal scientist and head of the Laboratory of Micro and Nano Optics at IRE NASU, which he created in 2010.

Prof. Nosich has held numerous guest fellowships and professorships in the EU, Japan, Singapore, and Turkey. They include, among others, a NATO-CNR Guest Researcher Fellowship in the Politecnico di Torino, a Visiting Professor Fellowship of TUBTAK in the Bilkent University, Ankara, an EPSRC Senior Fellowship in the University of Nottingham, and a post as Head of International Research Chair at the European University of Brittany.

Prof. Nosich's field of expertise spans computational electromagnetics across a broad range of frequencies, from optical waves to terahertz waves to microwaves, and concentrates on fundamental topics in wave scattering, absorption, and emission. His research interests include the methods of singular integral equations, analytical regularization, propagation and scattering of electromagnetic waves in open waveguides, simulation of microcavity and nanocavity lasers, and characterization of nano-optical antennas and sensors.

He proposed a powerful approach to the Maxwell-equation analysis of lasers, viewing them as open resonators equipped with active regions filled in with a gain material. Firstly, he applied that approach to the accurate study of modal thresholds and emission directionalities of various two-dimensional microcavity lasers and photonic-molecule lasers. More recently, this analysis was extended to the modes of plasmon-assisted nanocavity lasers, which are based on noble-metal strips or wires embedded into quantum wires. He has also applied it to the comparison of thresholds of the localized-surface-plasmon modes and the so-called grating or lattice modes in the lasers built on the periodic arrays of both metal nanowires and quantum wires. His achievements in the modeling of microcavity and nanocavity lasers are well documented by numerous publications in international journals and enjoy several hundreds of independent citations.

Prof. Nosich was one of the initiators and technical committee chairman and co-chair-



Prof. Nosich with his students at the Laboratory of Micro and Nano Optics in Kharkiv, Ukraine.

man of the International Conference on Mathematical Methods in Electromagnetic Theory (MMET) held in Ukraine biennially since 1990. Thanks to his efforts, since the early 2000s MMET conferences feature sessions on computational micro and nano optics and photonics. In 1995, he organized the IEEE East Ukraine Chapter, the first one in the former USSR. Currently, he represents Ukraine in the European Association on Antennas and Propagation. In 2015, he was a convener of the special session on "Advanced computational methods and analysis of optical nanosensors, resonators, and other photonic circuit components" at the EuCAP-2015 conference in Lisbon.

These achievements have brought to Prof. Nosich a broad international recognition. He was elected IEEE Fellow in 2004, Senior Member of the Optical Society (OSA) in 2012, and awarded the title of Doctor Honoris Causa of the University of Rennes 1, Rennes, France, in 2015.

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 unfavourable 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, but they became tragic after Ukraine joined Europe, because of the aggression, occupation and annexation of a part of the country. Prof. Nosich faced not only economic hardships (by 2016, GDP of Ukraine had dropped by 2.2 times with respect to 2013 level), but safety and security problems for himself and for his students and co-workers.

# Celebrating the centenary of the Institut d'Optique

## Legal domicile of the ICO since its birth.



The Institut d'Optique, 2 avenue Augustin Fresnel, 91120 Palaiseau, France, has been the legal domicile and the home of the ICO since its founding in 1917. The Institut d'Optique, whose activities have been “inspired by light” since then, is the oldest higher-education and research institution devoted to optics and photonics in the world.

The Institut d'Optique celebrates its centennial during the week of 9–13 October. Centennial activities in its three sites include conferences, exhibits, and guided visits. Invited scientists from all over the world will attend a special ceremony on 13 October – a soirée forum on science and innovation. Benjamin Vest will present the conference “*De l'optique à la photonique, 100 ans d'histoire de l'Institut d'Optique*”, and the final speech of the ceremony will be delivered by Alain Aspect, ICO Prize 1987, emphasizing the international

relations and global impact of the Institut d'Optique. Invitees will have the opportunity to visit the exhibits “*100 ans d'histoire de l'Institut d'Optique*”, “*Projets innovants en photonique*”, and enjoy a laser show by Minuit Une. Marking the celebration will be the publication of the *Book of the Centennial*, retracing 100 years of the history of optics and photonics in France.

The ICO-24 General Assembly, gathered in Tokyo, Japan, approved unanimously the following motion by ICO secretary-general Prof. Angela Guzmán: “The General Assembly of the International Commission for Optics congratulates the Institut d'Optique on its centennial, and expresses its gratitude for having served as the hosting institution of ICO since its origin”.

For more information see the official video: “Centenaire de l'Institut d'Optique” at [www.youtube.com/watch?v=8176nn9pe6s&t=2s](http://www.youtube.com/watch?v=8176nn9pe6s&t=2s).

## 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,  
P.O. Box 4572, Deerfield Bch  
FL 33442-4572, USA  
e-mail [secretariat@e-ico.org](mailto:secretariat@e-ico.org);  
[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

### Vice-presidents, appointed

K Choquette, J C Howell,  
S Morgan, E Rosas, P Urbach,  
A Wagué, M J Yzuel

### IUPAP Council representative

C Cisneros

### Editor in chief

#### Editorial committee

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 2017/18 events with ICO participation. For further information, visit the new ICO webpage at <http://e-ico.org/node/103>.

### 6–9 November 2017

#### International Workshop on Optics and Photonics

Islamabad, Pakistan  
Contact: Imrana Ashraf  
tel: +92-3330222001  
[drimrana@comsats.net.pk](mailto:drimrana@comsats.net.pk)  
[www.qau.edu.pk](http://www.qau.edu.pk)

### 23–26 November 2017

#### International Conference on Advances in Optics and Photonics (ICAOP-2017)

Hisar, Haryana, India  
Contact: Devendra Mohan  
tel: +91-9416893273  
[icaop2017@gjust.org](mailto:icaop2017@gjust.org)  
[www.gjuonline.ac.in/icaop2017/](http://www.gjuonline.ac.in/icaop2017/)

### 5–16 February 2018

#### Winter College on Optics

Trieste, Italy  
Contact: Joe Niemela  
tel: +39-040-2240555  
[niemela@ictp.it](mailto:niemela@ictp.it)  
<http://indico.ictp.it/event/7920/>

Responsibility for the correctness of the information on this page rests with ICO, the International Commission for Optics; [www.e-ico.org](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).