



NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE • INTERNATIONAL COMMISSION FOR OPTICS

SUPPORTING OPTICS IN PAKISTAN

SPIE Outreach grant support and OPTICA funding for Student Chapters help Optics & Photonics activities of the ALO Group



Prof. Imrana Ashraf (left) leads the Active Learning in Optics (ALO) Group in Pakistan.

During 2024, Pakistan faced a host of difficulties —political instability, economic uncertainty, and widespread disruptions— that hindered daily life. These challenges also affected the education sector, complicating inclusive outreach activities, as it could be expected.

One of the major goals of the Active Learning in Optics (ALO) Group during 2024 was to expand their programs to northern Pakistan.

In 2024, the ALO Group, lead by the ICO representative Prof. Imarana Ashraf, successfully organized 10 optics outreach activities across various institutions, with a special focus on engaging girls and young women. These initiatives have proven critical in enhancing access to STEM education for female students, who often face more barriers than their male peers. Two follow-up activities took place at Fatima Jinnah and Rawalpindi Women Universities, respectively and a first-time engaging workshop was celebrated at the International Islamic Uni-

versity in Islamabad. After the summer break, five additional optical outreach sessions took place at Quaid-i-Azam University, AQ Khan School and the Arid Agriculture University during fall. Special importance had the celebration of the International Day of Light on May 15-16 at the Physics Auditorium, Quaid-i-Azam University. May 15 was dedicated to 3rd-semester university students. It featured hands-on optics experiments and concept-based quizzes. The students not only enjoyed the session but showed strong conceptual retention and engagement. May 16 saw a large-scale Optics Fair attended by approximately 300-350 students, primarily girls, from four schools in Islamabad and Rawalpindi. The event offered interactive demonstrations and activity stations, creating an inclusive, exciting space for discovery.

Prof. Imrana Ashraf represents Pakistan's ICO Territory



A group of attendants to the outreach activities in Optics and Photonics organized by the ALO Group in Pakistan.

ICO-ICTP Gallieno Denardo Awards 2025

During the ICTP Winter College in Optics 2025, two Gallieno Denardo Awards were delivered.



Omnia Hamdy (right) and Gustavo Grinblat (left) received the Gallieno Denardo Award 2025.

Last 4th March, at the International Centre for Theoretical Physics (ICTP) in Trieste, Italy, the winners of the 2025 Gallieno Denardo Awards were presented, as part of a ceremony as part of this year's Winter College on Optics, organised by ICTP's Science, Technology and Innovation Unit.

This prize is co-sponsored by the ICO and annually honours young researchers in optics and photonics from developing countries, who have made significant contributions to their field and promoted science and research through their mentoring or outreach activities.

Omnia Hamdy from Egypt and Gustavo Grinblat from Argentina were awarded for their research activities on biophotonics and nonlinear optics, respectively.

Dr. Omnia Hamdy has received the 2025 ICO/ICTP Gallieno Denardo Award for her groundbreaking work in biophotonics and the development of innovative optical technologies for biomedical applications having important implications for public health, and for her strong mentorship of young scientists, encouraging interdisciplinary approaches that strengthen the field, especially across developing regions.

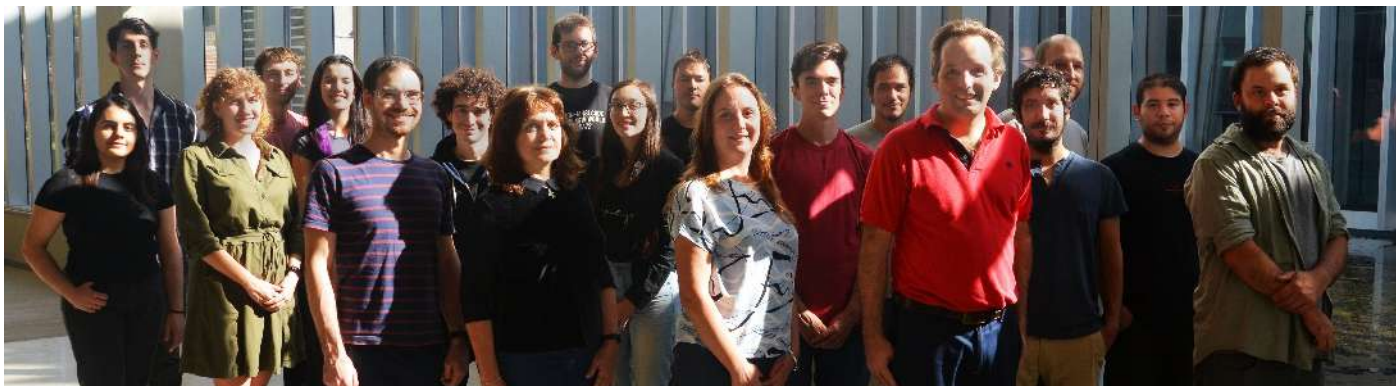
She is working as an Associate Professor at the Department of Engineering, Applications of Laser, The National Institute of Laser Enhanced Sciences, Cairo University. Her research interests include Biophotonics, Biomedical Optics, Laser Spectroscopy, Diffuse Optical Imaging and Machine Learning.

Omnia has published over seventy journals and conference papers at prestigious venues. Her citations exceed 600, as per Google Scholar. Prof. Omnia has supervised/co supervised five Ph.D., eight masters, and two undergraduate theses. Prof. Omnia heads the Biophotonics systems lab at NILES, Cairo University, whose focus includes diffuse optical imaging techniques, tissue optical clearing, adaptive optics and laser-induced fluorescence spectroscopy. Prof. Omnia is an active member in OPTICA and she is also a member in the Advisory Committee of the Electrical Engineering Division of the Egyptian Engineers Syndicate and in the Egyptian Biomedical Engineering Society (EBMES). She is volunteering in the academic mentoring program for Egypt Scholars inc., and for the STEM Her-Up association which aim to educate and mentor girls in the fields of science, technology, engineering, and Mathematics. Dr. Omnia has organized many summer internships and trainings at NILES in the field of biomedical optics for undergraduate biomedical engineering students to promote science in general and optics & biophotonics in specific. In addition to her participation in different outreach activities, seminars and awareness sessions, etc.

The motivation is to encourage a love for research, a drive to support others, and a commitment to expanding scientific outreach to low resources of Egypt, by passionately engaging with science and education.

Photos from summer training at the Biophotonics Lab, NILES, Cairo University for undergraduate biomedical engineering students.





Some members of the Quantum Electronics Lab from the Department of Physics of the University of Buenos Aires, Argentina.

Dr. Gustavo Grinblat from Argentina has been awarded the 2025 ICO/ICTP Gallieno Denardo Award for his significant contributions to nonlinear and ultrafast optics in dielectric nano-resonators, his leadership within the Argentine optics and physics communities, and his outreach efforts. He is a professor in the Department of Physics at the Faculty of Exact and Natural Sciences, University of Buenos Aires (UBA), Argentina, and holds a permanent researcher position with the Argentine Research Council (CONICET) at the Physics Institute of Buenos Aires (IFIBA).

His research focuses on nonlinear and ultrafast optics of dielectric and plasmonic nanoantennas and metasurfaces, two-dimensional materials, and hybrid systems. In 2016, he received the “J. J. Giambiagi” prize from the Argentine Physics Association for the best PhD thesis in experimental physics in Argentina for 2014-2015.

(From left to right) President of ICO Eric Rosas, winners Gustavo Grinblat and Omnia Hamdy, ICTP Director Atish Dabholkar



In 2017, he was awarded a Marie Skłodowska-Curie Fellowship during his postdoctoral research stay at Imperial College London, UK. In 2021, Prof. Grinblat received the “Estímulo” prize in physics from the Argentine Academy of Exact, Physical and Natural Sciences. He has published around 50 journal papers and contributed to over 100 conference presentations. According to Google Scholar, his h-index is 25, and his work has been cited more than 4,000 times. He is currently supervising 4 Ph.D. students and 1 MSc student and has previously supervised or co-supervised 5 MSc students and 1 postdoctoral fellow.

Together with Prof. Andrea Bragas, he leads the Nanophotonics Group at the Quantum Electronics Lab at UBA, focusing on the development of nanophotonic and nanophononic systems for light frequency conversion, ultrafast light modulation, and the transduction of electromagnetic into high-frequency acoustic waves and vice versa for processing and transmission of information.

Since 2020, Prof. Grinblat has been part of the Argentine Optics Territorial Committee (ICO member), and since 2022, he has been serving on the board of the Argentine Physics Association. Additionally, he has contributed to the organization of several schools and workshops on optics and photonics in the country and has been involved in outreach activities aimed at high school students.

ICO VP Nathalie Westbrook chairs the ICO/ICTP Gallieno Denardo Award Committee

PiMICS Project: Low-Cost Optics for Development

The full story is available at the official website
<https://pimics.org>



ICO Past-President, Prof. John Howell, is the leader of the PiMICS project.

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In 2023, John Howell had an idea of making a low-cost multi-spectral or hyper-spectral camera from the Raspberry Pi. He announced this at the Optics and Photonics Africa 2023 conference in South Africa. The idea was to use the Raspberry Pi, its camera, and the general purpose input/output (GPIO) pins to drive LEDs and/or filter wheels for building multispectral cameras. Multi-spectral or hyper-spectral cameras are incredibly important tools in agriculture, medicine, pharmacy, recycling, pollution management, quality control etc.

Hundreds of research papers have been written on the value of these cameras in agriculture alone. These imaging modalities in agriculture, for example, are rapidly expanding with the potential to significantly enhance crop yields, reduce water usage, check nitrogen content, have an early detection monitoring system for plant diseases and much more. A successful educational program in building multispectral cameras could not only greatly increase student capacity, but improve infrastructure capabilities in their home countries. From these ideas was born the Raspberry Pi multispectral imaging camera system (PiMICS).

Howell developed a pilot program using a small amount of funds from Chapman University and supported by the ICO. Undergraduate students in South Africa, Ecuador and the United States began designing, building and testing their cameras. They used multispectral analysis to study plant health, water stress in plants, melanin in skin, fruit (bananas, apples, avocados, and lemons) ripeness and nanostructured iridescence in butterfly wings (see “People and Projects”). The program gave the students important skills in 3D modeling, 3D printing, systems integration, electronics, feedback, control, Python programming, image analysis and spectroscopy. Their results were presented at the 26th general assembly of the ICO and were received with great enthusiasm and many researchers, not only from developing nations, wanted to have their students build these cameras, as the PiMICS program allows students to make their own experiments from scratch rather than a pre-canned experiment so common in undergraduate laboratories today.

Prof. John Howell
ICO Past-President

Forthcoming events with ICO participation

Below is a list of forthcoming events with ICO participation.

For further information, visit their official websites listed below.

9-13 June 2025

Light Conference on Laser & Quantum

Changchung, China

Contact: Jingze Yuan

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24-28 August 2025

XIII Annual Meeting of the EOS

Delft, The Netherlands

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17-21 November 2025

RIA0-OPTILAS 2025.

Santa Cruz de la Sierra, Bolivia

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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. Eric Rosas, Mexican Photonics Cluster, Mexico; eric.rosas@photonics-mexico.org. **Treasurer:** Prof. Kent Choquette, University of Illinois, USA; choquett@illinois.edu. **Secretary-General:** Prof. Humberto Michinel, Universidade de Vigo, Spain; secretariat@e-ico.org.