

NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE • INTERNATIONAL COMMISSION FOR OPTICS

ICO-ICTP Gallieno Denardo Award 2021

Davit B. Hayrapetyan's works address several aspects of semiconductor nanostructures.



Assoc. Prof. D. Hayrapetyan is head of department at the Russian-Armenian University since 2018.

Assoc. Prof. D. Hayrapetyan received the ICO - ICTP Gallieno Denardo award 2021 "For his breakthrough contributions to the theory of semiconductor nanosystems, as well as his promotion of optics and photonics in Armenia under difficult circumstances". He obtained his BSc and MSc in physics from Yerevan State University, Armenia, in 2004 and 2006, respectively and his PhD in semiconductor physics in 2009 from the same university. His works address theoretical investigation of electronic, excitonic and impurity states, optical, magnetic and thermodynamical properties of semiconductor nanosystems with different types and geometries. He developed the analytical theory for description of electronic and excitonic states in quantum dots with non-trivial geometries and generalized Kohn's theorem for these structures finally demonstrated experimentally by the group of Prof. Firsov from Peter the Great Polytechnic University.

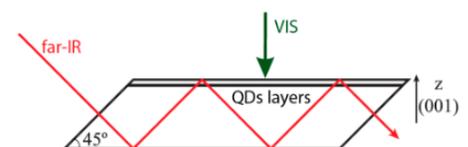
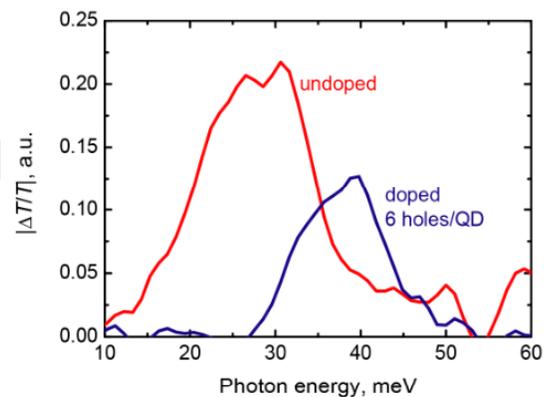
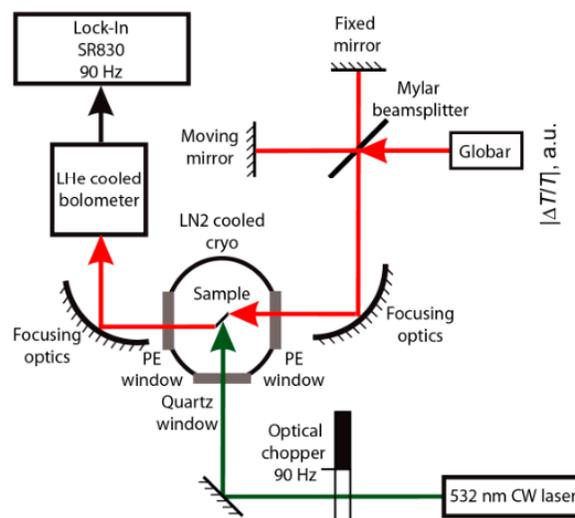
His theoretical work showed that conical QDs have emitting behaviour and high quantum yield which is crucial for LED applications. The exact analytical description of quantum nanostructures developed by Davit has importance in the design of optoelectronic devices of new generation. As a consequence of his research, his

University opened a Wolfram laboratory established jointly with Wolfram Research, to make a bridge between the department and industry.

He also organizes a master program of Alternative energy with Solar Group Inc. In 2019 Hayrapetyan won the prestigious EC Horizon-2020 grant "NanoQIQO" within the Twinning Program of the European Commission for research into smart Nanomaterials for Quantum Information and Quantum Optics, bringing much-needed research funding into Armenia. As a result of the project implementation, the University was able to boost its research excellence and innovation capacity, strengthen its reputation and improve its competitiveness in the field of nanomaterials for quantum informatics and quantum optics to contribute to achievement of the long-term progress towards sustainable objectives on national and European levels.

Prof. Mourad Zghal chairs the Gallieno Denardo Award committee

Experiment schematics and the measured spectra of the change of far-IR transmission due to external interband photoexcitation at 80 K. Data are plotted for undoped Ge/Si quantum dot structure (red curve) and doped structure (blue curve) with nominal doping of 6 holes/dot. Adapted from H.A. Sarkisyan, et. al, *Nanomaterials*, 9 (1), 56, 2019.



Let the Light Be Always ON...

Despite the challenging realities of 2021, some positive things also happened.



The author would like to thank Prof. Joseph Niemela (Senior Scientist, ICTP), Prof. Dr. Raheel Ali (Physics Department, Quaid-i-Azam University, Islamabad), Dr. Nigum Arshed (Division of Science & Technology, University of Education, Lahore), Mr. Abdul Rahman (Department of Physics, Quaid-i-Azam University, Islamabad) and Ms. Sana Murtaza (Physics Department, Quaid-i-Azam University, Islamabad) for their unconditional support.

Countries around the world began closing their educational institutes in March 2020. For Pakistan, with limited internet facilities, going for online education was not an easy step, especially for those living in remote areas. But in the most challenging times, we find our strength, and Active Learning in Optics (ALO) group at Department of Physics Quaid-i-Azam is no exception. After the end of first lockdown in Pakistan, we found a narrow window of time and decided to celebrate the International Day of Light. One-day event was organized at The Swabi Women University, a newly established university with non-existent experimental facilities in the teaching laboratories, situated in Khyber Pakhtunkhwa (KPK), almost 100 Km from the federal capital Islamabad. The event started with a presentation on importance of female education in Pakistan and especially in KPK. The role of ordinary light, laser light, LED and light based technologies was explained to the students with different optical experiments provided by OSA, SPIE and ICTP. A group of 45 undergraduate girl students attended this activity with full interest along with their Physics teachers, namely Dr. Ambreen Ayub, Dr. Shuja and Ms. Maria Tabraiz.

The first activity of IDL 2021 was organized at Islamabad Model College for Girls (IMCG), a public sector college, situated near Quaid-i-Azam University. A day full of learning cannot compensate the loss of one year of knowledge but a day full of fun with optics can bring joy for learning. On 11th February 2021, a special virtual session took place to celebrate International Day of Women & Girls in

Science. This event was streamed live via social media. The invited speakers of the session were Dr Imrana Ashraf (Senior Associate ICTP), Dr Nigum Arshed (University of Education, Lahore) and Dr Shamona Fawad Qazi (Quaid-i-Azam University, Islamabad). Around 100 undergraduate female students from Pakistan and abroad attended the session. The aim of the session was to create awareness among female students about careers in STEM.

The ALO group also organized a unique event to celebrate IDL 2021 under above mentioned name on 5th March 2021. The session was unique in a way that the invited speaker Aaron Haroon Rashid is a celebrity. He is an international pop star, and has produced Pakistan's first full length 3D animated series "Burka Avenger", to emphasize the importance of girls' education. We invited people across the globe to attend this session. Some famous names who attended this session were Prof. Joseph Niemela, Prof. Prof. Maria Yzuel - Past President SPIE, Ms. Hanan Dowidar-Head of Strategic Partnerships at 1001 Inventions, Jean-Paul Ngome Abiaga- Science advisor to the Director-General UNESCO along with other Pakistani and foreigner participants. This session was streamed live on our social media channels. The participants, including students from primary classes, asked questions and took part in discussion.

Prof. Imrana Ashraf
Quaid-i-Azam University, Pakistan



Participants in one of the activities organized by the Physics Department of Quaid-i-Azam University in Islamabad, Pakistan.

ICO Mourns the Passing of Frank Höller

Clear strategic thinking, acting and communicating were trademarks of Frank Höller.



Dr. Frank Höller was ICO Vice-President and later ICO Associate Secretary.

We are all deeply saddened by the unexpected sudden death of our colleague and friend Frank Höller, who passed away in the age of 65 on Easter Sunday April 4th, 2021. As ICO Vice-President (2011- 2017) and later as Associate Secretary, he took an important active role in shaping the ICO. Especially his outstanding commitment in the activities of the EXECOM resulted in important contributions to the stand of ICO in the international network of scientific organizations.

The improvement of the interaction between optical industry and academia was one of his key topics especially as a Vice-President elected from industry. Here his long years of experience in leading positions including that of the Chair of the German Society for Applied Optics (DGaO) allowed him to creatively represent in an ideal way a bridge between science and industry. He was convinced that in order to use the large amount of scientific knowledge in the international optical community for progress in society it is of utmost importance to enable free exchange of knowledge between scientists on a national as well as on an international level. And he saw the ICO as a perfect platform to enable such an exchange with a special emphasis on developing countries. In this sense he used intensively his privileged position as an Associate Secretary of ICO to encourage, organize and

support such scientific conferences. We are thankful to Frank Höller that despite his time-consuming and labor-intensive professional commitment for the new company “Scantinel Photonics” he intensively took care as Associate Secretary especially of the support of international conferences of ICO members.

We will sorely miss his experience as well as his balancing advices and creative proposals in the German Territorial Committee and the EXECOM - not to forget his invaluable engagement as co-chair in the preparation of the World Congress on Optics and Photonics ICO25-OWLS16 in Dresden, Germany, which due to the COVID pandemic had to be shifted to September 2022. In addition, based on his experience as initiator of the “Young Scientist Award” of the DGaO he was predestined to be chair of the committee for the “IUPAP-ICO Young Scientist Prize in Optics” (2014 - 2017). With this work as a whole, he has left a lasting mark on the ICO and far beyond. Yet, besides these outstanding professional achievements and activities for the ICO first and foremost we will miss a supporter and friend. Our thoughts and sympathy go to his family, especially his wife and daughter whom we wish all strength to deal with this dramatic loss.

Prof. Gert von Bally
ICO VP Appointed by OWLS

Tito Arcetri: In Memoriam



In words of Prof. Paolo De Natale, remembering the place where INO was located in Florence: “*Arcetri was home to ageless, universal scientists like Galileo Galilei, that here spent the last ten years of his life, or Enrico Fermi, who spent a few years teaching at the Physics Department of Florence University. Therefore, it seems natural for me thinking of Tito, working within this peculiar environment, as a multifaceted man of Italian Renaissance.*”

Fortunato Tito Arcetri, born in Reggio Calabria, Italy, in 1933, died on 15 February 2021, in Florence. He was Emeritus Professor of Physics of the University of Florence and ICO Vice President 1981-1984. Tito, as was simply named by all of us, went much beyond Optics, joining deep scientific knowledge and insight with a profound humanistic culture. He started his pioneering activity on lasers in 1957 at Centro Informazioni Studi Esperienze in Milan. In 1970, he won the Chair of Professor of Physics in the University of Pavia and in 1975 he moved to Florence, where he got the position of Professor of “Higher Physics” and was President of the “Istituto Nazionale di Ottica” (INO) for 25 years, promoting new research lines, as pattern formation in extended media, complex phenomena and cognitive processes. He published more than 450 papers and worth of note are the first demonstration of the deterministic chaos in CO₂ laser or generalized multistability. Classification of lasers in A, B and C classes are related to him. He also promoted quantum optics, optical metrology, optoelectronics and applications such as testing laboratories and industry collaborations.

He taught in many international institutions, such as the MIT, Stanford University, or the IBM Research Laboratories in Zurich. Worth mentioning is his founding, in 1980, of the Specialisation School in Optics, a post degree School of the University, unique in Italy, that he directed until 2003. He was one of the five founders of the SIOF (Società Italiana di Ottica e Fotonica), fellow of OSA and honorary member of the SIF (Italian Society of Physics). In 1995 he received the Max Born Award from the OSA: “For many contributions to photon statistics of lasers, cooperative atomic radiation effects, and laser instability and chaos” and in 2006 he received the Enrico Fermi Award from the Italian Society of Physics (SIF): “For his pioneering contribution to the knowledge of the coherence phenomena in matter and radiation, in particular for the first experimental demonstration of the statistical properties of coherent radiation”.

Prof. Anna Consortini
ICO President from 1993 till 1996

ICO General Meeting Goes Online in 2021

Due to the coronavirus crisis, the next ICO General Assembly will take place online next September 2021.

The ICO General Meeting, also known as its General Assembly, will take place online in 2021, as approved by the Bureau of the International Commission for Optics. This meeting gathers every three years delegates from all the territorial committees of the International Commission for Optics. Traditionally, the General Meeting takes place during the ICO Congress. However, due to the exceptional circumstances of the coronavirus pandemic, it was not celebrated in 2020 and it will take place online in the second week of next September 2021. It has been also approved by the ICO Bureau that in September 2022 it will be celebrated an extraordinary face-to-face General Meeting in Dresden, during the ICO-25 & OWLS 16 World Congress.

Due to the limitations of the online format, the next ICO General Meeting, will be devoted only to essential matters. There will be two sessions: the first one will take place on Tuesday 13th September from 13:00h to 15:00 (CET) and the first issue to be voted will be the admission of the new ICO territorial committee, so they representatives can participate in the rest of the meeting if they are admitted. Before the end of the meeting, the candidates for the election of the new ICO Bureau will present their

statements and the online voting procedure will be explained and open for the delegates to choose amongst the different options.

Traditionally, a 24h-notice for candidacies for the new ICO Bureau was accepted. However, due to the exceptional circumstances of the online format, for this election, the candidates must apply before 14:00h CET August 31st 2021, so the electronic voting system can be ready on time for the election.

The second session of the ICO General Meeting will be devoted essentially to the presentation of the results of the election of the new ICO Bureau and it will take place on Thursday, 15th September 2021 from 13:00 till 15:00 (CET). After this session both the old and the new bureau will gather online.

Detailed information about the videoconference system and the potential novelties in the election procedure will be sent to the contact person of each ICO territorial committee well in advance by the ICO Secretariat.

Prof. Humberto Michinel
ICO Secretary General

Contacts

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

Bureau members (2017–2020)

President R Ramponi

Secretary H. Michinel,

Escola de Enx. Aeroespacial
Universidade de Vigo, Campus
de Ourense (Spain)

e-mail: hmichinel@uvigo.es

Past-president Y Arakawa

Treasurer J Niemela

Vice-presidents, elected

Q Gong, J Harvey, N Kundikova
S Otero, S-H Park, A Podoleanu,
L Sirko, M Zghal,

Vice-presidents, appointed

K D Choquette, J C Howell, C
Londoño, E Rosas, G von Bally,
A Wagué, G. Pauliat.

IUPAP Council representative

C Cisneros

Editor in chief H Michinel

Editorial committee

W T Rhodes, Florida Atlantic
University, K Baldwin, Australian
National University, Australia;
J Dudley, Université Franche-
Comté, France

Forthcoming events with ICO participation

For further information, visit the ICO website <https://e-ico.org>

19-23 July 2021

AOP2021: International Conference on Applications of Optics and Photonics

Guimarães, Portugal

Contact: Manuel F. Costa

info@aop2021.org

<http://aop2021.org>

13-17 September 2021

EOSAM-2021: Annual Meeting of the European Optical Society

Paris, France

Contact: Elina Koistinen

elina@europeanoptics.org

<http://eosam2021.org>

15-19 January 2022

Optics & Its Applications

Yerevan-Ashtarak, Armenia

Contact: Narine Gevorgyan

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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. Roberta Ramponi, Director IFN-CNR, Politecnico di Milano, Italy; roberta.ramponi@polimi.it. **Treasurer:** Prof. Joseph Niemela, International Center for Theoretical Physics, Italy; niemela@ictp.it. **Secretary:** Prof. Humberto Michinel, Universidade de Vigo, Spain; hmichinel@uvigo.es.