



NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE • INTERNATIONAL COMMISSION FOR OPTICS

Optical museum comes to life in Russia

A new museum in St Petersburg is hoping to raise the profile of optics and photonics amongst young people.



Deputy-governor A Manilova and president of the Russian optical society Prof. V Vasil'ev at the opening ceremony of the exposition at the new optical museum.

One of the problems we face in optics and photonics is attracting the next generation of students and young scientists and showing them what this wonderful and magic world of light, optical science, technology and systems has to offer. Our fundamental tool in addressing this is the motto: "Physics is a small part of optics", and the argument that during the last few thousand years optics has given the clearest world view for humanity. Optics is multidisciplinary and yet has served as a fundamental tool for many different kinds of scientific investigations, while at the same time acting as a generator for new fields of knowledge. Moreover, optics and photonics are fields of knowledge where truly fundamental problems of our reality remain to be solved. These qualities have characterized optics throughout the development of human civilization.

Our young scholars should be steered towards choosing optics and photonics education as the alternative basis for acquiring computing knowledge. An obstacle to be overcome in this regard is the often poor relationship between optical education and real optical research, the splitting of optical science into different branches, demographic conditions, troubles in maths and physics school education, and collisions between traditional educational methodologies and new-generation mentalities.

At the Russian St Petersburg State University of Information Technologies, Mechanics and Optics, solutions have been suggested to remedy at least some of these problems. The design of websites and portals, and the organization of on-line intellectual competitions in IT and optics are two of the ways we could increase the use of the internet to popularize optics. Multimedia educational resources, 3D simulations and virtual optics laboratories are another way. However, hands-on, interactive optical science exhibits in the form of a new optical museum for education and training seems to be the most effective way. This was the main reason for organizing the new St Petersburg State Optical Museum at the end of 2008.

The goals of the museum are: to show the brilliant world of optics; to formulate different educational strategies for a wide range of school-aged children; to use St Petersburg's culture to teach optics in the community to citizens and



The 144 types of different optical glasses produced in Russia under the leadership of academician GT Petrovsky.



The central hall of the museum, which displays the historical optical exhibits: lamps, mirrors and lenses.

children alike; and to demonstrate classical optical phenomena and modern devices, equipment and systems in an interactive form.

The optical museum is located at the beautiful Vasil'evsky Island area – the historical and scientific centre of ancient St Petersburg – on the ground floor of the XIX century building at the Birjevaya Line. This is the former location of the Eliseev family apartment. This famous merchant's apartment later became the Department of the S.I. Vavilov State Optical Institute. The museum is supported by the city government, the Russian Optical Society, and by several optical and IT companies.

The museum hosts the Russian achievements exhibition, a famous collection of 60 unique, large holograms and 144 different optical glasses. There are many types of native opti-



A display of navigation instruments, ancient viewfinders and microscopes in the museum's central hall.

cal equipment for education and training, and many modern European, Asian and American optical components, devices and systems. Samples of optical software for education and research, as well as a large collection of artifacts and elements related to optics history, are presented in an exposition that spans nine halls of the museum. There are also exhibits geared towards children, ranging from optical toys to illusions that will fascinate and hold the interest of youngsters.

The main halls include displays on light and sight, holography, optical artifacts and an historic book collection; glass and optics materials; optical elements and light sources; microscopes and interferometers; projection and photo techniques; diffraction "magic images" in the ultraviolet and infrared spectra; and different kinds of mirrors and laser deflection systems.

Special halls are devoted to astronomical optics with mini planetariums, precise measurements facilities, computer games, laser weapons and chess, kaleidoscopes, mirror systems and light music. For training purposes there are on-line experiments in interference, polarization and diffraction (including fractal diffraction), and 18 types of microscopes and 10 lasers are demonstrated.

There is a special posters section describing the work of outstanding foreign and famous Russian scientists, including DS Rozdestvensky, SI Vavilov, GT Petrovsky and YuN Denisjuk.

The most interesting shows for children are computing holography, Chinese magic and Greek burning mirrors, modern adaptive mirrors, solar cells, security laser systems, polarization control based on photo elasticity, and night vision systems.

Previous lectures, seminars and conferences in optics and photonics are also available in the museum's conference hall. For example, the lectures on optical history for graduate and undergraduate students based on two volumes of the book *Five Millennia of Optics* (published in Russian) are available, and videos from the museum will soon be available on the internet.

There is no other museum in Russia that provides such a rich optical exhibition as that of the St Petersburg State Optical Museum. It promises to pique the interest of those who have never been exposed to the world of optics and photonics, and is guaranteed to fascinate those who already possess a solid background in the field. The museum has something for everyone. Given this marvellous addition to St Petersburg and the world of optics, the specialists of the St Petersburg University of Information Technologies, Mechanics and Optics and of the Russian Optical Society, extend a cordial invitation to all optics and photonics experts, foreign guests, and the general public to visit our museum.

Prof. VN Vasiliev, president of the Russian Optical Society, Prof. SK Stafeev, organizer of the Optical Museum, and Prof. MG Tomilin

Holography shines at joint conference

The VI Technolaser and II Optics, Life and Heritage conferences join forces.

This April, "VI Technolaser and II Optics, Life and Heritage" were held together for the first time as an ICO endorsed meeting in Havana, Cuba. The Cuban Territorial Committee of ICO took the initiative to join the two meetings to give the unified event a larger scope and wider visibility, under the heading "Optics and laser technology in science, industry and culture". Technolaser was organized under the auspices of CEADEN (the Center for Technological Applications and Nuclear Development) with Prof. Juan G Darias as chair, while Optics, Life and Heritage was arranged under the patronage of the Cuban Physical Society and chaired by Prof. Angel G Augier.

The meeting was organized in two parallel sessions with two plenary talks, invited talks, oral communications and poster sessions. A total of 100 participants from 15 countries, mainly from Latin-America (Argentina, Colombia, Cuba, Chile, Mexico and Venezuela), Canada, Europe and the Middle East attended the event. Interesting talks focused on the applications of lasers in new spectroscopic techniques (LIDAR, LIBS), femtosecond and pulsed (single molecule) laser sources, and on other frontier areas

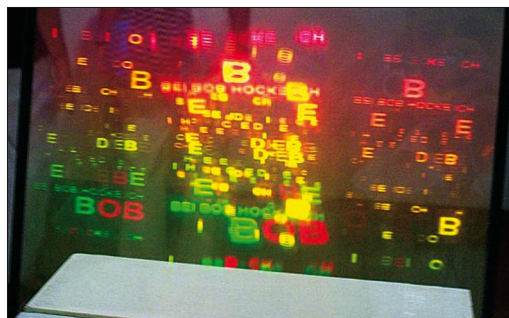


Participants at the National Capitol Building in Havana. On the first row, from left to right, are the conference chairs Angel G Augier and Juan G Darias. At the centre in the front are Maxim Tomilin and Maria L Calvo.

of research such as optoelectronics, integrated optical waveguides in various configurations for optical communications, photonic materials and polarimetry.

A large number of presentations were devoted to a wide and rich variety of broader cultural and biomedical applications, with emphasis in biomedicine, food processing, art restoration, and holography. A total of 41 contributions were presented during an afternoon poster session. For the first time ICO offered awards for the best posters by PhD and MS students. A

Flying colours: an art piece from the holographic series by German artist Dieter Jung, who was an invited lecturer at this year's conference.



committee formed by six senior scientists had to perform the difficult selection. The first prize, a diploma and €100 cash, was awarded to José Manuel Gutierrez-Hernández from the University of San Luis de Potosi in Mexico for his presentation “Study of the optical pumping in a photopolymer: application to integrated optics hybrid switcher”. The second prize, a diploma and informatics consumables, was awarded to Lester Moreira from the Institute of Science and Technology of Materials in Havana, Cuba, for his work “A prototype for laser induced breakdown spectroscopy (LIBS) equipment”. The third prize, also a diploma and informatics consumables, was awarded to Daniel José Nisperuza from the Universidad Nacional de

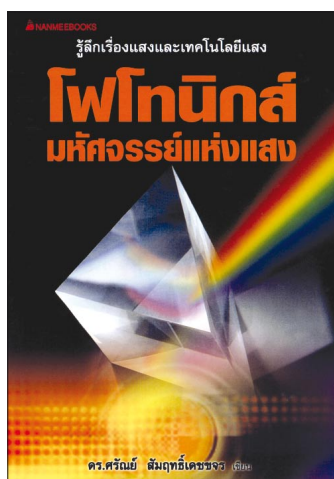
Colombia in Medellin for his contribution “Precise alignment of a longitudinal Pockels cell for Q-switch operation of a Nd:YAG laser”. Original diplomas were designed for the occasion by engineer and graphic designer Pablo Claro.

As an interesting cultural activity the “Holography in sciences, arts, and heritage” exhibition, organized on behalf of the Cuban Physical Society by Angel G Augier and Alfredo Moreno, was held at the Alexander von Humboldt Museum in Havana. Remarkable artists and devoted scientist from Belgium, Cuba, Finland, Germany and Russia participated in this exhibition, which was praised by the local press. The response was so positive that the exhibition, which contained holographic reproductions of special arts, crafts and historical pieces, may become a permanent attraction in La Havana. Other social and cultural activities were a musical soiree and farewell party, which included an excellent and vibrant Cuban–African dance display that was enthusiastically received by the organizers and attendees.

The positive atmosphere and the level of scientific discussions provided the necessary ingredients to assure the success of the event and served to generate high expectations for future editions of the joint conference.

Growing optics and photonics in Thailand

Focus on a national effort in Thailand to boost research and investment in optics and photonics.



More than 2100 copies of *Photonics: the miracle of light* have been sold and distributed around Thailand.

Optics and photonics in Thailand are gradually growing. On the industrial side there are more than 8000 companies and manufacturers with ~USD0.81 billion in investments. Research activities in 14 universities and three national research institutes are also very active, especially in the fields of ophthalmic lens design, spectroscopy, optical communications, laser material processing, optical information processing, quantum information processing, sensing, security, green IT, biophotonics and nanophotonics. In addition to scientific publications, the focus is on research topics that directly respond to the needs of industries, government organizations and local communities.

Examples of the research output in field and industrial prototypes cover progressive lens designs, self-cleaning mirrors, non-invasive lie-detection systems, non-invasive credit-card verifiers, mass human temperature screening systems, non-contact lens thickness measurement systems, and surface plasmon resonance-based biosensing systems.

Apart from the research arena, scientists at national research centres, professors from local universities and engineers from companies are working together with officers from the Thai Industrial Standards Institute to revise industrial standards for fibre-optic cables and related issues. In addition, to strengthen optics and photonics



Thai students using the educational kit “Having fun with science using light”, which has been donated to schools.

in the Thai community, in particular in education, they have been working closely to initiate activities that can help motivate new workforces, students and the general public. More than 2100 copies of the book *Photonics: the miracle of light* (in Thai) have been sold and distributed. The book aims to simply show that basic optics and applications are around us all the time. Under the “Shining Spectrum to Society” project led by Suwannee Phoojaruenchanachai, Thai researchers collected available optical and electronic components to develop an educational kit called “Long Lens with Optics” in Thai (or “having fun with science using light”). This has been donated to 14 schools in rural areas. The researchers also trained 120 teachers on how to use the educational

kit and how to link objects in everyday life to get students' attention. In addition, the researchers gave a seminar on photonics in everyday life to 1100 students in grades 7–12 to help them understand more about optics in their science classes, as well as to motivate them to undertake optics and photonics-related science projects.

Several training courses have been arranged to fit the needs of local companies and manufacturers to strengthen their engineers. These are on basic optics and applications, Moiré and applications, optical thin films and ellipsometry, optical communications, fibre-optic components, and fibre-to-the-home technology.

Thai chapters of the main international optical societies have also been formed, and through

them international speakers well known in their fields have been invited to give talks in Thailand. Becoming part of the ICO is in the interest of Thai researchers as well. In the last five years, six conferences were held in Thailand. These included four national conferences on optics and applications, the International Workshop and Conference on Photonics and Nanotechnology, and the 5th International Conference on Optical Communications and Networks.

To grow photonics in Thailand even more, new generations embedded with self creativity and self motivation are needed.

Sarun Sumriddetchkajorn, Photonics Technology Laboratory, National Electronics and Computer, Technology Center, Thailand

Join the celebration of the year of the laser



Fifty years ago, the invention of the laser initiated a wave of technological development that has revolutionized the way we live. LaserFest, a celebration throughout 2010 of the 50th anniversary of the laser, is set to emphasize the laser's impact on our lives and highlight its potential for the future. Through a series of events and programmes, LaserFest will recognize and honour the accomplishments of the scientists, engineers, inventors and entrepreneurs who made the discovery, development and application of

the laser possible. LaserFest will also showcase the importance of scientific research and development and its role in fueling economic activity, and illustrate how scientific research leads to innovation that impacts and transforms all segments of society.

We invite the ICO family to join this celebration by planning activities in all ICO territories. Find out how you and your territory can participate at www.LaserFest.org, where a calendar for worldwide activities will be available.

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Forthcoming events with ICO participation

For more information about forthcoming events, see www.ico-optics.org/events.html.

5–7 July

Education and Training in Optics and Photonics, ETOP 2009

Saint Asaph, North Wales, UK

Contact: Sonja Hardy, tel +44 1745 535 100, sonja.hardy@opticechnium.org, www.etop.org.uk

31 August – 3 September

International Conference “Micro- to Nano-Photonics II – ROMOPTO 2009”

Sibiu, Romania

Contact: Valentin Vlad, tel +40 21 457 44 67, fax +40 21 457 44 79, v_i_vlad@yahoo.com, www.infim.ro/ROMOPTO2009

20–24 September

9th International Conference on Correlation Optics “Correlation Optics '09”

Responsibility for the accuracy of this information rests with ICO. President: M L Calvo, Universidad Complutense de Madrid, Departamento de Óptica, Facultad de Ciencias Físicas, Ciudad Universitaria s/n, E 28040 Madrid, Spain; mcalvo@fis.ucm.es. Associate secretary: Gert von Bally, Centrum für Biomedizinische Optik und Photonik, Universitätsklinikum Münster, Robert-Koch-Straße 45, 48149 Münster, Germany; Ce.BOP@uni-muenster.de.

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7–9 October

ICO Topical Meeting on “Emerging Trends & Novel Materials in Photonics”

Delphi, Greece

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9–14 November

Optics and Lasers in Science and Technology for Sustainable Development, LAM 9 International Workshop and EBASI 7 Conference

Dakar, Senegal

Contact: Ahmadou Wague, tel +221 77 634 19 61, fax +221 33 824 63 18, wague@refer.sn, www.lamnetwork.org



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