



ICONewsletter

Commission Internationale d'Optique

International Commission for Optics

April 2003

President's Message

ICO, the Place where the World of Optics meets



It is a great honor, but also a big challenge and responsibility, to take the leadership of the ICO over from Art Guenther. During his three years of office, he succeeded to put to work the new structure of ICO, after the adoption of new Statutes by the ICO General

Assembly in San Francisco (August 1999), which includes in addition to the traditional Territorial Committee Members also International Society Members. With this move, the ICO made a significant step towards the realization of its vision to become the platform for the global promotion of optics, the place where the information of that is going on locally will be exposed globally: *ICO, the Place where the World of Optics meets!*

It is also the time to thank all members who are leaving the ICO Bureau after three or more years of activity (T. Asakura, P. Chavel, D.A.B. Miller, J. Ojeda-Castañeda, B.E.A. Saleh, C.J.R. Sheppard) and to welcome those who have been elected (or appointed) members of the new Bureau 2002-2005. Special thanks go to Pierre Chavel, who has served the ICO during 12 years as a loyal and conscious Secretary-General and initiated many actions to improve the visibility of ICO. He has accepted to assist with his experience the new Bureau as Senior Advisor, a new position created "ad personam".

With the admission of 3 new Territorial Committee Members (Estonia, Latvia, Lithuania), 2 new International Society Members (LAM and OWLS) and 3 new Associated Members (Greece, Tunisia, Morocco) and the geographical distribution of the Bureau members (Argentina, Canada, China, Finland, Germany, Israel, Italy, Japan, Korea, Poland, Sénégal, Spain, Switzerland, The Netherlands, USA) has the ICO further improved its possibilities to fulfill its objective, as stipulated in the ICO Statutes: "The objective of the ICO is to contribute, on an international basis, to the progress of the science of Optics and its applications. In particular, the ICO promotes international co-operation and facilitates the rapid exchange of information, by encouraging and furthering the organization, on an international basis, of scientific meetings and summer schools. It emphasizes actions for the education and training in Optics internationally. It develops special actions for the development of Optics in

regions where particular support is needed. It strives to improve the recognition of Optics as a field of science with a significant impact on economy."

To further improve the exchange of information between the ICO Bureau and the Territorial Committee Members, each elected Vice-President has been asked to accept responsibility for personal and regular contacts with about 6 Territorial Committees. Every Territory has now a direct contact with at least one member of the ICO Bureau. The ICO Awards (ICO Prize, ICO Galileo Galilei Medal, ICO/ICTP Award) and the ICO Traveling Lecture Program are best suited to increase the international visibility. The Territorial Committees are emphatically invited to come up with proposals for these actions.

The ICO is aware that optics in developing countries is different from what it is in developed countries, and promoting optics in those countries is one of the things that ICO intends to do in a particularly apt way. Besides the already existing Traveling Lecturer and Proceedings Donation Program, ICO will start as a new action, conducted by G.C. Righini (g.c.righini@ifac.cnr.it), the implementation of a web page with a catalog of documents on education in optics available electronically and at no cost. OSA, SPIE and IEEE/LEOS have agreed to support this action and to propose ways to implement it.

Optics and Photonics are enabling technologies. ICO helps to make it happen, through your involvement.

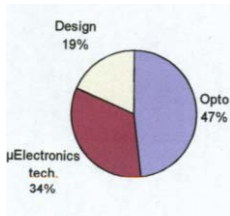
Your President for the next three years

René Dändliker

European Research in Optics and Photonics: the 6th Frame Program

The European Community is holding a multiannual Framework Program for research, technological development and demonstration activities with the aim to contribute towards the creation of the so-called European Research Area (ERA). The new Framework Program 2002-2006 is now under current development. The scientific and technological objectives and broad lines of the activities are summarized in three general objectives: 1) strengthening the scientific and technological bases of community industry. 2) encouragement to become more competitive. 3) promoting research activities deemed necessary by virtue of other chapters of the treaty.

In order to achieve these objectives more effectively, the frame program has been restructured around three targets: 1.- Integrating European research. 2.- Structuring the ERA. 3.- Strengthening the foundations of the ERA. The activities carried out under the first target



may take mainly the form in the priority thematic areas, integration of bilateral cooperation with third countries, and participation of third country researchers and organizations in projects and networks in areas of particular interest to those

Figure 1.- Gral. statistics / thematic areas are 1.- Genomics and biotechnology for health. 2.- Information Society Technologies. 3.- Nanotechnologies, intelligent materials and new production process. 4.- Aeronautics and space. 5.- Food safety and health risks. 6.- Sustainable development and global change.

The presence of fundamental and applied research as well as technologies in Optics and Photonics can be considered in general inside the six mentioned priority thematic areas. We can, for example, mention the following interconnections: In area 1, bio-informatics, models for human brain functionality, in area 2 one can consider artificial intelligence, computing optics, design and production of micro- and opto-electronic and photonics components, also in area 3 actions are envisaged for development of smart materials and associated technologies as well as new production processes including virtual manufacturing technologies and high-precision engineering. Space Optics is connected with area 4 and areas 5 and 6 would include new chemical and physical sensors as well as new concepts in solar photovoltaic technologies, among other ones.

Cooperation research activities are encouraged in particular with Mediterranean countries, Russia and the States of CIS and developing countries.

The maximum overall financial amount for the six mentioned areas are as follows (in euros million): Area 1, 2×10^3 , area 2, 3600, area 3, 1300, area 4, 10^3 , area 5, 600 and finally area 6, 1700.

Last September 2002 information on new Expressions of Interest (EoI) for proposals of networking groups related to these priority thematic areas appeared in the official web site of the EU. We are showing here some statistics on the Micro, Nano and Opto-electronics programs as a part of Information Society Technologies (IST). The total number of EoI's presented in the three mentioned areas was 161.

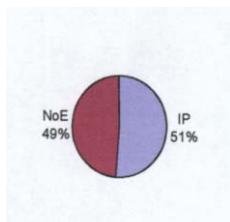


Figure 2.- Distribution for the two types of applications: NoE: Network of Excellence.

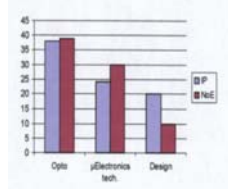


Figure 3.- Distributions of the three areas for NoE and IP, respectively.

The proposals, grouped into opto, microelectronics technology and design (nano is contained in opto and microelectronics) were distributed as shown in figure 1,

with specific percentages assigned to the 3 areas. In a few cases (6), the EoI's are addressing 2 areas (e.g. nanomaterials for opto-and microelectronics, design and production of high-bandwidth devices). Those where file in one of the three mentioned areas according to their main center of gravity. The next two figures (Figs.2-3) display the distribution of the proposed instruments.

Impacts are expected for the three areas for gradually maturation of industrial applications as well as growing in business opportunities and expansion of technologies. More information can be found in: <http://www.cordis.lu>

Maria L. Calvo, ICO Secretary General

LAM-6 meeting report: 6th International Workshop on Laser Physics and Applications

The 6th in a series of conferences organized by the African Laser Atomic Molecular and Optical Science Network (LAM) was held December 11-17, 2002 in Tunis, Tunisia with Professor Zohra Ben-Lakhdar of the University of Tunis as Conference Chair. The meeting venue was an attractive seaside resort in Gammarth just outside Tunis. The setting was most conducive to discussion and allowed for intense concentration as there were no parallel sessions (with over 40 oral presentations, numerous posters and a stimulating round table discussion of educational issues) organized by Professor Ben-Lakhdar. The conference was well attended with over 70 attendees from 30 different nations including, most appropriately, 16 African countries.

The quality of speakers in the program was superb, both from outside and from within Africa. Besides the diversity of the attendees, the diversity of the topics covered, clearly demonstrated the pervasive and ubiquitous nature of optics and photonics as an enabler of significance for the 21st Century both as to economic development and quality of life.

The conference was made possible in large because of support from the International Center for Theoretical Physics (ICTP) in Trieste which allowed for many of the



ICO Members from left to right: Dr. A. Wagué, V.P. (LAM), Vice-president; Dr. A. H. Guenther, Past President; Dr. Pierre Chavel, Past Secretary; Dr. Ari Friberg, Associate Secretary with the Conference Organizer, Dr. Zohra Ben-Lakhdar of the University of Tunis

African participants to attend. ICO was as well a sponsor of the conference and was well represented by the reporters of

this article and Professor Ahmadou Wagué. Professor Wagué was recently elected Vice President representing LAM as a new member society. The election took place in Florence this past fall at the triennial ICO conference. Additionally, besides the ICO and ICTP there were many other sponsors.

Inasmuch as one of ICO's main thrusts is assisting in the development of a global optics enterprise this was an important meeting for Africa. In fact development of optics on the African continent has become a special interest item for ICO and is being closely supported by Professor Pierre Chavel, recent ICO Executive Secretary and Professor A. H. Guenther, Past President of the ICO as counselors.

The conference was opened with a message from President Ben Ali of Tunisia and afforded many of us from outside Africa an appreciation for African issues and their aspirations for growth and development in part from the benefits of an optics and photonics based economy. The conference and its setting afforded the attendees ample opportunity to experience the generosity, friendship, hospitality, and kinship of the African optics community. In that regard ICO encouraged close collaboration between African countries and initiatives such as LAM has initiated and codified to which other initiatives should seek opportunities to collaborate in a complementary manner. The African optics and photonics community should work together in concert coherently and not in a fragmentary manner as their facilities are somewhat limited while their human resources abound. Communication and cooperation are key and ICO will help give visibility, support and assistance to any partnership. As such ICO will champion and assist as Africa grows its optics enterprise and enters and participates in the international optics community.

Besides reports on many fundamental research areas in the field of optics especially those at the forefront, many were of an applied nature in areas important for the development of the African continent. Those stressed included, e.g., agriculture, pollution and other environmental issues, biomedical, biological, communication, education, and other

FACILITY	CITY AND COUNTRY	FIELD OF SPECIALISATION
National Laser Centre	Pretoria, South Africa	Manufacturing, Machining, and Materials Processing
University of Cheikh Anta Diop	Dakar, Senegal	Atomic and Molecular Physics and Laser Spectroscopy and Processing
Laser and Fibre Optics Centre	Cape Coast, Ghana	Agricultural and Environmental Science
National Institute of Laser Enhanced Science	Cairo, Egypt	Medical and Biological Applications of Lasers
Tunis el Manar University	Tunis, Tunisia	Plant and Environmental Science and Molecular Spectroscopy
Advanced Technologies Development Centre	Algiers, Algeria	Laser Spectroscopy and Surface Studies

informational related subjects such as storage, etc. The proceedings of the conference will be placed on the web for easy access.

The meeting also offered opportunities for related discussions such as planning for the development of the National Laser Centre in South Africa and its intention to assist in the development of as many as 6 optics centers around the African Continent allowing for equipment sharing and operations at various locations (see Table). This fledgling initiative is an opportunity to boost Africa's entry into the global optics world which can be assisted by

Professor Wagué in his role as a Vice President within ICO representing LAM.

All in all the meeting was an unqualified success, but besides that it was an investment of many individuals time. What will be important are the dividends Africa will accrue from that investment through interactions made possible by the many new associations made. Already planning is taking place for LAM-7. LAM-6 will be a tough act to follow.

LAM 6th Workshop URL: <http://www.hexabyte.tn/lam6/> and LAM Network URL: <http://www.lamnetwork.org/>

Arthur H. Guenther, Ari T. Friberg and Pierre Chavel

News on Books Publishing

In this section we inform on a new book published by Vladimir Lukin, a recipient of the ICO Galileo Galilei Award 2000. The title of this monograph is: *Adaptive Beaming and Imaging in the Turbulent Atmosphere* and has been published co-authored with Boris V. Fortes, both researchers are from the Institute of Atmospheric Optics (Novosibirsk, Russia) at the Laboratory of Applied and Adaptive Optics. The edition is from SPIE Press, Vol. PM109, September 2002, it is an update of the Russian *Adaptivnoe Formirovanie Puchkov i Izobrazhenii v Atmosfere* edited by the Publishing House of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, 1999 (translated by A.B. Malikova). With a total of 220 pages and five chapters, the main contents are: - Mathematical Simulation of Laser Beam Propagation in the Atmosphere. - Modeling an Adaptive Optics System. - Adaptive Imaging. - Minimization and Phase Correction of Thermal Blooming of High-Power Beams. - A Laser Reference Beacon as a Key Element of an Adaptive Optics System. This book is available in : <http://www.spie.org/bookstore/pm109>

Optics Update: ISO standards

When we buy or sell any kind of service or device we expect it to perform as required. Also, we do not live isolated in the world, so we want any piece of equipment, even the smallest screw, to fit in its place doing its job within a whole system. That is why we need standards, a set of rules and definitions of characteristics that ensure that products, processes and services are adequate for what we want to do. Within this context the reference association is ISO, the International Organization for Standardization. ISO is a federation of national standard bodies from more than 140 countries. As a federation covering nearly all the technical fields, an important characteristic of the technical work within ISO is that it is decentralized and distributed. There are technical committees, then subcommittees and then working groups in charge of writing the standards. If we consider Optics, we will find that most of the work is carried out by the technical committee TC 172. Fields such as cinematography, photography, eye protectors, micrographics and fiber optics for telecommunication, are considered in separate committees, but it covers many other subjects. For example, if we are interested in a tricky question such as how to define

and measure the width of a laser beam, we would find out that subcommittee SC9 (Electro-optical systems) issued the ISO 11146:1999 standard in 1999, "Lasers and laser-related equipment - Test methods for laser beam parameters – Beam widths, divergence angle and beam propagation factor". In this document we find terminology, definitions and test procedures relevant to the subject. Another important question is who does the job of defining and writing the standards. The answer is that ISO standards are developed by consensus, in a voluntary and industry-wide manner. All the views have to be taken into account, so technical experts from manufacturers, vendors and users, professional and research organizations, testing laboratories and governments participate in the discussions. Collaboration is important, because, as usual, the result depends on the people involved. Once an agreement is reached, the text is published as an ISO International Standard. But even then

the work cannot be considered finished, and in most cases periodic revisions are needed. For example, in our previous illustration, the ISO 11146:1999 standard, soon after defining the scope of the standard it was found that some types of beams were not covered by the original document. Now there are several groups working to cover the new cases.

For further information you contact your national standard body or pay a visit to ISO's web page, <http://www.iso.ch>. In that page, as a bonus, you will find out why an organization whose name is International Organization for Standardization in English, or Organisation Internationale de Normalisation in French is also called ISO.

Julio Serna (Complutense University of Madrid, Spain). The Chair of the ICO Committee for Standards in Optics is **Lingli Wang** (l.l.wang@philips.nd)

Forthcoming events with ICO participation

Responsibility for the correctness of the information on this page rests with ICO, the International Commission for Optics; <http://www.ico-optics.org/>. President: Prof. René Dändliker, Institute of Microtechnology, University of Neuchâtel, CH-2000 Neuchâtel, Switzerland. Assoc. Secretary: Prof. Ari T. Friberg, Royal Institute of Technology, Optics, Electrum 229, SE-164 40 Kista, Sweden; ari.friberg@imit.kth.se

18-20 June 2003

Optics in Computing (OC 2003)

Washington, DC, USA
General Chair: Ravindra Athale, DARPA/MTO
Arlington, VA 22203-1714 USA
Optical Society of America, 2010 Washington Ave, NW,
Washington, DC, 20036-1023, USA
Fax: +1 202 223 1096, info@osa.org

30 June – 3 July 2003

ICO Topical Meeting on Polarization Optics

Joensuu, Finland
Co-Chairs: Prof. Jari Turunen, Univ. of Joensuu, & Prof. Asher A. Friesem, Weizmann Institute of Science, Rehovot, Israel
PO'03 Secretariat: c/o Hannele Karppinen, Dept. of Physics, Univ. of Joensuu, P.O. Box 111, FIN-80101 Joensuu, Finland
fax. +358 13 251 3290,
icopo@joensuu.fi ; <http://physics.joensuu.fi/icopo/>

8-11 September 2003

RomOpto 2003 (7th Conference on Optics)

Constanta, Romania
Prof. Valentin I. Vlad, Institute of Atomic Physics,
Univ. of Bucharest, NILPRP - Dept. of Lasers,
P.O. Box MG-36, R-76900 Bucharest, Romania
fax. +40 1 423 1791, vlad@ifin.nipne.ro
<http://alpha1.infim.ro/ROMOPTO2003/>

16-19 September 2003

6th Int'l Conference on Correlation Optics

Chernivtsi, Ukraine
Prof. Oleg V. Angelsky, Correlation Optics Dept., Chernivtsi
State University, 2 Kotsyubinsky Str., Chernivtsi 58012, Ukraine
fax. +380 3722 44730, oleg@optical.chernovtsy.ua
<http://hosted.sacura.net/corropt2003/>

6-8 October 2003

8th Int'l Conference on Education and Training on Optics and Photonics (ETOP 2003)

Tucson, Arizona, USA

Chair: Barry L. Shoop, U.S. Military Academy,
Photonics Research Ctr., West Point, NY
fax. +1 845 938-3062, barry.shoop@usma.edu
Co-Chair: Grover A. Swartzlander, Jr., Univ. of Arizona, Tucson,
AZ, grovers@optics.arizona.edu
OSA, 2010 Massachusetts Ave., NW,
Washington, DC 20036, USA, info@osa.org
<http://www.etoponline.org/>

13-15 July 2004

ICO International Conference, Optics & Photonics in Technology Frontier

("ICO'04 Tokyo", co-located with ODF'04 and ICOSN'04, held together with InterOpto'04)
Makuhari Messe, Chiba, Japan
Dr. Kimio Tatsuno, Hitachi Ltd., CRL, 1-280 Higashi-koigakubo,
Kokubunji, Tokyo, Japan. Fax. +81 423 27 7673,
tatsuno@crl.hitachi.co.jp ; <http://www.opticsdesign.gr.jp/>

2-8 October 2004

5th Ibero-American Meeting on Optics, and 8th Latin-American Meeting on Optics, Laser and Their Applications (V Riao / VIII Optilas)

Porlamar, Margarita Island, Venezuela
Prof. Aristides Marciano Olaizola
Centro de Física, Instituto Venezolano de Investigaciones Científicas, Caracas 1020 A, Apartado 21827, Venezuela
fax. +58 212 504 1148, marcano@pion.ivic.ve

21-26 August 2005

ICO-20, Triennial Congress of the International Commission for Optics

"Challenging Optics in Science and Technology"
Changchun, China
Dr. Jianlin Cao, President
Changchun Institute of Optics, Fine Mechanics and Physics, 140
Renmin Street, Chanchung 130022, P.R. China
fax. +86 431 5682346, caojl@ciomp.ac.cn