



# ICON NEWSLETTER\*

Commission Internationale d'Optique

International Commission for Optics

July 2003

## ICTP Winter College on Biophotonics, 10-21 February 2003: report

The Abdus Salam International Center for Theoretical Physics (ICTP) organizes every year the Winter College on subjects relevant to Optics.



A view of the Abdus Salam Center for Theoretical Physics, Miramare, Trieste, Italy (ICTP) where the Winter College 2003 took place

This *Winter College on Biophotonics: Optical Imaging and Manipulation of Molecules and Cells* was the first of its kind and appeared to be quite successful -to both the Organizers and the participants. It attracted more than 100 participants from 42 countries who came to listen to 17 selected lecturers and to present their own research activities in the "LAMP" workshops.

The College was supported by the co-sponsoring Organizations: ICO (International Commission for Optics); OSA (Optical Society of America); SPIE (The International Society for Optical Engineering) and OWLS (International Society on Optics Within Life Sciences). Its directors, Professors G. von Bally (Univ. of Münster, Germany), P. M. W. French (Imperial College, London, U.K.) and F.S. Pavone (Univ. di Firenze, Italy), had selected outstanding international lecturers who covered the wide range of this emerging interdisciplinary field, ranging from fundamentals of molecular biology and optical manipulation of cells, through state-of-the-art techniques in microscopy, imaging and coherent metrology to clinical optical tissue imaging using fluorescence and diffuse light – not to mention laser safety.

In particular, the following lecturers were delivering specific talks: K. Berg-Sorensen (Niels Bohr Inst., Copenhagen, Denmark); V. Croquette (École Normale Supérieure, Paris, France); C. Depeursing (EPFL, Lausanne, Switzerland); A. Falaschi (Trieste, Italy); P. French (Imperial College, London, U.K.); S. Hell (Max-Planck-Institute for Biophysical Chemistry, Göttingen, Germany); M. S.Z. Kellermayer (Pecs Univ., Hungary); B. Kemper (Univ. Münster, Germany); V. Lakshminarayanan

(Univ. of Missouri, St. Louis, USA); O.E. Martínez (Univ. de Buenos Aires, Argentina); R. Marzari (Univ. di Trieste, Italy); A. Oraevsky (Univ. Texas, Houston, USA); U. Osterberg (Thayer School of Eng. Hanover, USA); F.S. Pavone (Univ. di Firenze, Italy); C. Sheppard (Univ. of Sydney, Australia); G. Von Bally (Univ. Münster, Germany).

The lectures covered a broad scope of subjects: Introduction and elements of cell biology, manipulations of biological units, microscopy, optical sources, imaging, metrology, tomography and laser safety.

Directors and lecturers observed that the contributions by the participants during the discussions and in the LAMP-Workshops lived up to the high international standard for which ICTP Colleges are known. It was especially apparent that interest and enthusiasm for interdisciplinary research in emerging areas like biophotonics is not restricted to the industrialized countries but it is also evident in the so-called "developing countries" and that this activity can contribute to reducing the technological gap among nations.

The program of the Winter College was extended by the ICO/ICTP Prize ceremony, at which Dr. Róbert Szipöcs from the Research Institute for Solid State Physics and Optics, Budapest, Hungary, was awarded the 2003 prize (see also this ICO Newsletter issue). During this occasion, the winner of the 2002 prize, Dr. Alphan Sennaroglu from Roc University, Department of Physics, Istanbul, Turkey, was also honored for his scientific contributions to the development of solid-state lasers for ultrashort pulse generation and associated power optimization studies. The diplomas were given to the awardees by the ICO Secretary-General, Prof. Maria Calvo, in the presence of the ICO-Vice-President Prof. Gert von Bally and the ICTP-Director Prof. Gallieno Denardo, followed by presentations of the recipients. The subsequent reception sponsored by the ICO provided a further chance for the mostly young participants to socialize. This academic and social interaction between the participants and lecturers is considered to be an extremely important aspect of the ICTP Colleges.

Inside the school, the LAMP (Laser, Atomic and Molecular Physics) program included discussion groups and internal seminars. The following participants:

B. Anderson (Univ. of Cape Coast, Ghana); S. Costantino (Univ. Buenos Aires, Argentina); J.A. Delgado Atencio (Centre for Technological Applications & Nuclear Development, Havana, Cuba); N. Ghosh (Centre for Advanced Technology, Indore, India); S.K. Mohanty (Centre for Advanced Technology, Indore, India); A.S. Ndao (Cheikh Anta Diop Dakar Univ., Senegal); Y. Phaneendra Kumar (IIS, Bangalore, India); A.F. Rebolledo Velasco (Univ. del Valle, Cali, Colombia); A. Sennaroglu, a recipient of the ICO/ICTP Award 2002 (Koc Univ., Istanbul, Turkey);

E. A. Sergeeva (Inst. of Applied Physics, RAS, Nizhny Novgorod, Russia); D. Teixeira de Silva (IPEN/CNEN-SP, Center for Lasers & Applications, MEO, Sao Paulo, Brazil), delivered seminars in relation with the program contains.

The three directors were especially grateful for the support and assistance of the local organizer, Prof. Gallieno Denardo and the secretary Mrs. Marina de Comelli.

Related link with additional information:

<http://agenda.ictp.trieste.it/agenda/current/fullAgenda.php?email=0&ida=a0260>

**Gert Von Bally**, Winter School 2003 co-director and ICO Vice-president appointed by OWLS

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## Announcing ICO/ICTP Award 2003 to Róbert Szipöcs



At an ICO-hosted party during the Winter College, the fourth ICO/ICTP Prize was announced and formally presented at the ICO/ICTP Award ceremony. The award is intended for scientists less than 40 years old who are active in research in optics and have significantly contributed to the promotion of research activities in Optics in their own or another developing

countries. The winner for 2003 is Dr. Róbert Szipöcs, a research scientist currently at the Research Institute for Solid State Physics and Optics, Hungarian Academy of Sciences, Budapest (Hungary).

After completing his MSc. at Technische University of Budapest, he has been working at the Optical Coating Laboratory of the Research Institute for Solid State Physics of the Hungarian Academy of Sciences. Working toward his doctoral degree, he investigated the nonlinear optical behaviour of optical thin film interference filters containing compound semiconductors. During the same period of time, he developed a software for analysis and synthesis of optical interference coatings.

After receiving his university doctoral degree, his research concentrated on the area of development of optical interference coatings used in femtosecond pulse solid state lasers and related fields of optics such as synthesis of graded-index dielectric coatings, computer optimisation of interference coatings, computational physics, interferometry and mode-locked solid state lasers, ultrafast phenomenon and spectroscopy.

In 1993, at the Research Institute for Solid State Physics and Optics, Budapest, Hungary, he developed special dispersive dielectric laser mirrors for femtosecond laser systems in collaboration with researchers at the Technical University of Vienna, Austria. These became known as chirped mirrors. This invention has been awarded by US Patent on "Dispersive dielectric mirror" including applications on mirror-dispersion-controlled Ti:sapphire

laser oscillators. In general, chirped mirrors offer a solution for broadband dispersion control and feedback in femtosecond laser systems. They combine the benefits of a broader high-reflectivity range (as compared to low dispersion, standard quarterwave mirrors) with dispersion control over the reflectivity band. As a consequence, chirped mirror technology makes possible shorter pulse duration and more compact and reliable design in fs lasers. One of the most important applications of chirped mirrors is their use in Kerr-lens mode-locked Ti:sapphire laser oscillators.

In 1995, Dr. Szipöcs founded R&D Lazer-Optika Bt, which develops and offers dispersive dielectric mirrors for different mirror-dispersion-controlled femtosecond pulse laser systems, such as Ti:sapphire oscillators, Cr:LiSAF oscillators, Yb:glass or Nd:glass oscillators, fs chirped pulse amplification systems (CPA) and optical parametric oscillators (OPO-s). In 1997, he founded R&D Ultrafast Lasers Ltd, which develops and offers different femtosecond pulse laser systems, such as mode-locked Ti:sapphire laser oscillators in collaboration with his research institution.

In 1998, a new laboratory for ultrafast laser technique and laser spectroscopy was founded at the Research Institute for Solid State Physics and Optics. Since then, he worked on the scientific and technical development of this laboratory as a project leader (Development of femtosecond pulse laser system by using chirped mirrors for dispersion compensation). Currently, his research interest includes femtosecond nonlinear pulse propagation in microstructure (photonic crystal) optical fibers, femtosecond time resolved spectroscopy and two-photon microscopy.

Dr. Szipöcs has been a visiting scientist at the ICTP, Trieste, Italy, for various periods during the last ten years and delivered various conferences and invited talks.

In 1995, he received the Youth Prize of the Hungarian Academy of Sciences, and in 1996, he was honored with the International Dennis Gábor Award. He is author or co-author of more than 30 scientific papers dealing with applications of special dielectric mirrors in femtosecond lasers and related works. His papers have been cited more than 600 times by independent authors. Additionally, he authored some 70 conference papers including some 10 invited conference lectures.

The ICO/ICTP Award Committee recognized Dr. Róbert Szipöcs's pioneering work in the understanding of the phase behavior of optical thin film devices creating a revolutionary progress in the field of femtosecond pulse lasers and thin film optics. The ICO/ICTP Award Committee has recognized the great quality of his work, mainly developed in his country of origin.

The ICO/ICTP Award Committee consists of Prof. A.A. Friesem of Weizmann Institute, Israel, Chair; Prof. G. Denardo of ICTP, Trieste, Italy; Prof. A. Consortini of University of Florence, Italy and Dr. M. Danailov of Synchrotron Trieste, Italy.

Nominations are now open for the forthcoming ICO/ICTP Award 2004.

Related link and nomination instructions can be found in: <http://www.ico-optics.org/awards.html>.

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## REPORT ON THE ICTP MEETING (Trieste, Italy, 20 February 2003): A new TSOSA, Advisory Group for Optics activities in developing regions

At the occasion of the Winter College on Biophotonics held at the Abdus Salam International Center for Theoretical Physics (ICTP, 10-21 February 2003, Trieste, Italy), a one day meeting took place to update various issues concerning the programs on Optics and Photonics for developing countries.



Some of the participants at the ICTP meeting, Trieste (Italy), 20 February 2003. (Photograph taken by P. Chavel)

The chair of the meeting G. Denardo, ICTP Executive Deputy and head of the Administration Department, presented a brief resume on ICTP activities in Optics, initiated 30 years ago (activities started after the proposal of actions of Prof. Alfred Kastler, Faculty of Sciences, Paris, France, and Nobel Prize in Physics 1966).

The following participants were invited: M. Alarcon (UNESCO), M. Altarelli (Elettra Synchrotron Trieste), E. Arthurs (SPIE), M.L. Calvo (ICO), P. Chavel (personal invitation of G. Denardo), A. Johnson (OSA), B.K. Kim (IAEA), V. Lakshminarayanan (OSA and USAC/ICO), P. Sirarti (U. Trieste, on behalf of P.S. Shumate, IEEE/LEOS), G. Von Bally (OWLS/ICO), A. Wagué (LAM/ICO).

The two main points of the meeting agenda were: "Which cooperation in Optics?" and "How to make programs of different organizations resonate?". G. Denardo explained the current activities on Optics and Photonics inside the so-called Trieste System. It consists on the following organizations and institutions: ICTP, International Council of Science (ICS), the Third World Academy of Sciences (TWAS), the International Center for Genetics Engineering and Biotechnology (ICGEB) and the Synchrotron Radiation Facility at Trieste (Elettra). Among the current activities developed inside the Trieste System are training courses at the Laboratory for Lasers and Optical Fibers (LFO) situated at the Elettra Synchrotron light source in Trieste. Along with various programs at the so-called ICTP/IAEA Sandwich Training Educational Program to strengthen the scientific background of young university researchers.

ICO exposed details on its collaboration since 1993 with ICTP on the organization of a periodical Winter College in Optics, focused on various subjects with an insight on Fundamental and Applied Optics and Photonics. In 2003 the Winter College was dedicated to Biophotonics: Optical Imaging and Manipulation of Molecules and Cells. In

addition, ICO has created jointly with ICTP the ICO/ICTP Prize. It is addressed to young researchers from developing countries (as defined by the United Nations), who conduct their research in a developing country (or extended collaboration with other developing countries), and are less than 40 years old. This prize is delivered at the occasion of the Winter College.

Other organizations and institutions mentioned their interest on active participation for supporting the activities of the Trieste System. SPIE and OSA have already signed a Memorandum of Understanding (MOU). Discussions of training activities with education as a main focus have to be initiated with enhancement of collaboration with institutions in developing countries. There exists nowadays ICTP affiliated centers in Dakar (Senegal), Cape Coast (Ghana), Cameroon and Vietnam.

ICO stressed the necessity to show the interconnection between basic and fundamental researches in Optics with an increase on the quality of life and the corresponding interaction with a modern society model. ICO is having among its initiatives the creation of an Optical Data Bank in collaboration with the ICTP Book Donation Program.

G. Denardo proposed the creation of the Trieste System for Optical Sciences and Applications (TSOSA) Advisory Group, with the mandate to promote actions on Optics and Photonics in developing countries, proposing of subjects for future Winter Colleges, training courses of ICS, Sandwich programs, external activities relevant for the Trieste System that can be exported to developing countries. The size of the TSOSA Advisory Group is defined by: IAEA, ICO, IEEE/LEOS, OSA, OWLS, SPIE, UNESCO, and the Trieste System itself (as a unique body). Representatives of the mentioned organisations have to be elected inside them. An annual meeting of the TSOSA Advisory Group will take place coinciding with the Winter College.

ICO has to undertake the election of a representative in the TSOSA Advisory Group, an action to be issued on the forthcoming ICO Bureau to be held in Joensuu (Finland), next 28-29 June 2003, at the occasion of the ICO Topical meeting "Polarization Optics".

**Maria L. Calvo**, ICO Secretary

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## Obituary: *In memoriam* Walter Lewis Hyde, 1919 - 2003

Walter Lewis Hyde signed his name as W. Lewis Hyde,



but was known as Lem Hyde to his friends. He was born in Minneapolis, Minnesota (1919) and studied physics at Harvard University, receiving a B. Sc. in 1941 and a master's degree in 1943. While

studying for his doctorate he worked at Polaroid Corporation and later at Baird Associates. This was his early immersion into Optics, as Edwin Land at Polaroid had just perfected the technique of making large sheets of polarizing filters, and



Walter Baird was developing spectrometers for the infrared. After receiving his Ph.D. in 1949 he worked from 1950 to 1953 as a scientific liaison officer in the London Office of ONR (the Office of Naval Research). The mission of the ONR London Office was to keep aware of the principal physics research efforts in Europe, and with his background in Optics he visited almost all of the European centers of Optics and attended ICO meetings from 1950 on. He was soon a good friend of André Maréchal in Paris, Erik Ingelstam in Stockholm, W. David Wright in London, and Giuliano Toraldo di Francia in Florence.

He was elected a Vice-President of ICO in 1962 and in 1966 he was elected Secretary-Treasurer of ICO, serving until 1969.

After his stint with the ONR London Office, Lem Hyde

worked as a research physicist at the American Optical Company in Massachusetts until 1960, then as director of development at J.W. Fecker Division until 1963, when he went to the Institute of Optics at the University of Rochester as a professor of Optics until 1968. He was president of OSA in 1970 and continued active in both OSA and ICO throughout his career. His later occupation was more in academic administration than in Optics per se; he was provost at New York University until 1972, and executive director, Connecticut State Technical Colleges until his retirement in 1984. His interests were in optical instruments (particularly microscopes and telescopes) and in polarized light. He wrote many papers in Optics history. He died at his home in Connecticut on January 9, 2003.

**John N. Howard**

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## 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](mailto:ari.friberg@imit.kth.se)

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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](mailto:icopo@joensuu.fi) ; <http://physics.joensuu.fi/icopo/>

15-16 July 2003

### **Tecnolaser**

Havana City, Cuba

Contact: Dr. Justo Ravelo Triana, CEADEN, 5ta y 30 Miramar, Playa, La Habana, Cuba

fax. +53 7 203-1220, [tecnolaser@ceaden.edu.cu](mailto:tecnolaser@ceaden.edu.cu)

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](mailto: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](mailto: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](mailto:barry.shoop@usma.edu)

Co-Chair: Grover A. Swartzlander, Jr., Univ. of Arizona, Tucson,

AZ, [grovers@optics.arizona.edu](mailto:grovers@optics.arizona.edu)

OSA, 2010 Massachusetts Ave., NW,

Washington, DC 20036, USA, [info@osa.org](mailto:info@osa.org)

<http://www.etoponline.org/>

20-24 October 2003

### **III Int'l Conf. for Students, Young Scientists and Engineers (Optics 2003)**

St. Petersburg, Russia

Contact: Dr. Ekaterina Utanova, Technical Univ., 14 Sabliskaya str.,

St. Petersburg 197101, Russia

Fax. +7 812 232-1467, [conf\\_optics@mail.ifmo.ru](mailto:conf_optics@mail.ifmo.ru)

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](mailto: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 Marcano Olaizola

Centro de Fisica, Instituto Venezolano de Investigaciones

Cientificas, Caracas 1020 A, Apartado 21827, Venezuela

fax. +58 212 504 1148, [marcano@pion.ivic.ve](mailto: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](mailto:caojl@ciomp.ac.cn)

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International Commission for Optics. <http://www.ico-optics.org/>; Bureau members (2002-2005): President: R. Dändliker; Past-President: A.H. Guenther; Treasurer: G.T. Sincerbox; Secretary: M.L. Calvo, Departamento de Óptica, Universidad Complutense, 28040 Madrid, Spain, e-mail: [mlcalvo@fis.ucm.es](mailto:mlcalvo@fis.ucm.es); Associate Secretary: A.T. Friberg; Vice-Presidents, elected: A.A. Friesem, N. Gaggioli, G.F. Jim, B.Y. Kim, M. Kujawinska, G.C. Righini, L. Wang, I. Yamaguchi; Vice-Presidents, appointed: H.H. Arsenault, G. von Bally, A.A. Sawchuk, T. Tschudi, A. Wagué, A.M. Weiner. IUPAP Council Representative: Y. Petroff