

# REPORT of CREDO

## The Committee for Regional Development of Optics

### ICO Bureau Meeting

### Ghana.

Angela M. Guzman, Chair  
16 November 2007

## Introduction

From my perspective one of the most successful initiatives of the Committee has been the creation of subcommittees by region. Members of the subcommittees have been extremely active, and the information presented in this report was prepared in large part by them. Their involvement in the Committee contributed not only to the establishment of CREDO's goals, but to the achievement of those goals. ICO benefits enormously from their volunteer commitment, since they increase not only ICO's visibility within the optical community, but they also extend its range of action through knowledgeable and capable individuals who share ICO's mission of promoting Optics worldwide. I thank all of them for their enthusiasm and for their many valuable contributions.

The Committee was joined by two additional members this year. Maria S. Millan from the Universitat Politècnica de Catalunya in Barcelona, Spain's representative to the ICO, has joined the Latin American subcommittee with the hopes of strengthening the ties between optics activities in Spain and those in Latin America and to increase publication in the major Spanish-language optics journal, *Optica Pura Aplicada*. Professor L. Hazra of Calcutta University,, General Secretary of the Optical Society of India, joined the Asian subcommittee and has been an enthusiastic contributor to that subcommittee's activities.

## Latin America

### Brazil:

The Iberian-American Conference RIAO/OPTILAS 2007 was held in Campinas, Brazil, October 21-26, 2007. There were 459 submitted abstracts from 370 registered participants from 10 Latin-American countries, Spain, USA, France, Germany, Italy, UK, Israel, Ukraine, Romania, and Finland.

Niklaus Wetter was appointed as Guest Editor for the Proceedings of that conference, which will be published by the American Institute of Physics (AIP). The reviewing process of 253 full-length papers submitted should be completed by now. It is expected that corrected manuscripts will be sent to AIP by December 21<sup>th</sup>.

Highlights of the RIAO/OPTILAS General Assembly:

1. It was agreed that Peru will host RIAO/OPTILAS 2010 with Mexico as alternative host country
2. Members of the Latin American Subcommittee presented the last version of the web page of the Red Latinoamericana de Optica (Redola), <http://www.redola.org/>, designed and built by Prof. Carlos Treviño. The web page has an interactive map and links to many institutions. We expect that

once the web page has been presented to the Iberian-American optics community, additional relevant information will be channeled to and through it.

3. The Assembly explored the possibility of creating an international organization that will be in charge of the following functions:
  - (a) Look after the continuity of the RIAO/OPTILAS series.
  - (b) Help find support for the series, establish and maintain contacts with international societies and organizations, and give advice to the RIAO/OPTILAS organizers, especially when the conference is to be organized in countries with small optics communities.
  - (c) Act as a framework to promote and help support optics research in countries that lack their own organizational structure and perhaps lack also enough critical mass to create their own physical or optical society.

Other Meetings and Conferences held in Brazil in areas related to optics, as reported by Prof. Hypolito Kalinowski:

- The IV International Symposium on Non-Crystalline Solids & VIII Brazilian Symposium on Glass and Related Materials, October 21-25. Two main topics: Rare earths up-conversion phenomena and non-linear optics in glasses. See <http://189.19.1.13/congresso/>. The 4th International School on Glasses and Related Materials followed, Oct 25-28, Aracaju, Brazil, with emphasis on optical properties of materials. This event overlapped with RIAO/OPTILAS.
- The SBMO/IEEE International Microwave and Optoelectronics Conference was held in Salvador, Bahia, from 29 October to 1 November 2007 with about 350 participants.
- The 9th "Jorge André Swieca" Summer School on Quantum and Nonlinear Optics will take place at the University of São Paulo Physics Institute (IFUSP) from 11 to 22 February 2008. The information link is <http://www.sbf1.sbfisica.org.br/eventos/evjas-oq/xi/english/indexEn.shtml>. Note that in this case there will be overlap with the Winter School in Trieste.

## Colombia:

In November 2006 the Colombian Network of Optics organized the X ENO (X National Meeting on Optics) and the I Andean and Caribbean Conference on Optics and Applications (I CANCOA) with participation of Professors from Colombia, Venezuela, Ecuador, Peru, Cuba, Argentina, and the USA. Previous to the meeting there were five short courses. There were eight Plenary and three invited talks, and approximately 120 contributed papers. The Forum arrived to the following agreements:

- (1) The next Colombian Meeting on optics, XI ENO, will be held jointly with the II CANCOA in Pamplona, Colombia, in 2008.
- (2) Establishment of an International Committee to provide support for II CANCOA, composed of representatives of the Andean and Caribbean Regions including those who attended I CANCOA.
- (3) Academic support to the optical communities on Peru and Ecuador for the eventual creation of their ICO Territorial Committees.
- (4) Support the establishment of a census of human resources active in research on optics, including researchers and graduate students.
- (5) Creation of a register of capabilities for research, knowledge areas, and large research equipment, with the purpose of detecting strengths for research and promote exchange and collaborations in the Region.
- (6) Support the realization of a Latin American School on Optics, an idea that has been incubating since RIAO/OPTILAS 2001.

## **Venezuela:**

The Venezuelan School on Optics was organized by the Venezuelan Territorial Committee and was held in the framework of the VIII Congreso Venezolano de Química (VIII Venezuelan Conference in Chemistry) in June 2007, UCV, Caracas. Topics of the School were Quantum Optics and Nanophotonics. Attendance of approximately 30 students, and 5 invited Professors working in USA, but originally from Venezuela and Colombia. It is important to note that optics in Venezuela is primarily a topic of research in chemistry and that the fabrication of nanostructures by chemical methods has been undertaken. Currently there are conversations about organizing a Colombian-Venezuelan School on Optics within the framework of the next ENO/CANCOA Meeting in Colombia. Another initiative is the creation of a Latin American Network on Nanosciences, following the pattern of the Nanosciences African Network Initiative (NANOAFNET) organized by ICTP, UNESCO and AIEA.

## **Mexico and Central America:**

Mexico's proposal to host ICO 22 in 2011 is supported by a large research community (four large research centers in optics—CIO, CICESE, INAOE, CCADET-UNAM—and multiple activities in several Universities, including Guadalajara (UdeG), Puebla (BUAP), Sonora (DIFUS), and Veracruz (UV)), and a long tradition of research on optics. The optics community in Mexico consists of 250-300 researchers, 400-500 graduate students (200-300 M. Sc, and 200 Ph.D). Two main events are held annually in Mexico, the Reunion Anual de Optica (Annual Meeting on Optics) and the Symposium "Optics and Industry." Annual contributed papers number roughly 200 and 100 respectively. Selected contributed papers (50-70 for each conference) are published by AMO and SPIE. Although the interaction with industry is still weak, there are already 20-30 opticians working in industry.

In 2003 Mexican students started creating OSA/AMO and SPIE Chapters. Currently there are four OSA Student Chapters (INAOE, CIO, ITEM campus Monterrey and FIMME-UGto), and three SPIE Student Chapters (INAOE, CIO, ITESM-Monterrey). Student Chapters hold Meetings parallel to those of AMO, DO-SMF, and SPIE, and through traveling lecturers programs of those organizations have had invited lecturers including Virendra N. Mahajan from the University of Arizona, Govind P. Agrawal from the University of Rochester, and Maria L. Calvo from the Universidad Complutense de Madrid in Spain..

Carlos Treviño has served as ICO ambassador in Panama and Costa Rica where opticians are mainly organized within IEEE. Medical doctors showed interest on the INAOE's project in Biophotonics and THz wave applications. We expect that Mexico will be a natural catalyzer for optics research in Central America, starting perhaps by inviting researchers of neighbor countries to attend Mexican activities.

## **Argentina:**

The ICO Territorial Committee is coordinated by the representatives of the Executives Committees of the Optical and Photophysical Divisions of the Physical Argentinean Association. In order to apply for support to the CONICET (National council of scientific and technological research), a Network of laboratories of Optics and Photophysics (RED ARGENTINA DE LABORATORIOS DE ÓPTICA Y FOTOFÍSICA) was created. It constitutes a powerful tool to obtain financial support and has made possible the organization of several events during the last several years. The Network is coordinated by the members of the Territorial Committee. During the last year CONICET allocated 25,000 Argentinean pesos that were used to fund totally or partially the following events:

- Course LOCI 2007 – Course “ Laser and Optics in Sciences and Engineering). CIOp (Centro de Investigaciones Ópticas). May 2007. Participation of graduate students from Argentina and Latin America.
- III TOPFOT, III Joint Workshop on Optics and Photophysics. CIOp, June 2007.
- EOA, Encuentro de Optica Aplicada ( Meeting on Applied Optics). Organized by CIOp and the Engineering Faculty of UBA. October 2007, immediately after RIAO/OPTILAS.

A SPIE Student Chapter was created this year in CIOp, and the creation of the OSA Student Chapter is under way.

Myriam Tebaldi has acted as ICO ambassador in the south of South America, visiting Peru and Uruguay and promoting the creation of Territorial ICO Committees in that countries. She reported recently the creation of a Research Center on Optics in Bolivia that asked for inclusion in REDOLA.

## **PERU**

The recent creation of the Peruvian Network on Optics has contributed greatly to the establishment of two major scientific events that attract the attendance of most Peruvian researchers in optics and students of science and engineering: The Peruvian Meeting on Optics and the International School of Optics, Photonics and Lasers. The last one was held the week before RIAO/OPTILAS.

The Peruvian Network of Optics promotes the development of research in areas that had not been formerly explored in Peru, such as holography, laser physics, optical image processing, and Fourier optics. The efforts of the Peruvian community have yielded their first fruits this year when, under advisor Prof. Guillermo Baldwin, a SPIE student chapter was created at the PUCP. Looking to further involvement in the international optics community, Peruvian researchers are initiating medium-term efforts to join the ICO and to apply to host RIAO/OPTILAS 2010.

## **INDIA:**

Perhaps it is not widely known that the Optical Society of India (OSI) was founded in the year 1965, and that we are honored with the participation of Prof. L. N. Hazra, its General Secretary, in CREDO. OSI gathers scientist and technologists and is engaged in the promotion and dissemination of knowledge of optics in all its branches, pure and applied. OSI publishes since 1972 the quarterly Journal of Optics, the only archival journal of its kind published regularly by India. We are all kindly invited by Prof. Hazra to submit contributions for publication in this Journal. Prof. Hazra would also like to see more interaction between members of CREDO. I suggested that perhaps that could be possible through the ICO's program of traveling lecturers.

Anurag Sharma, another member of CREDO, is the editor of the OSI Newsletter that has already published 6 issues and will soon be posted at OSI's webpage [www.osiindia.org](http://www.osiindia.org). He is also Secretary of the Delhi OSA Section that organized half day seminars by Dr. V.N. Mahjan in April. For next year in February the Delhi OSA Section is planning a two-day event 'Know your Research Laboratories' at CSIO (Central Scientific Instruments Organization) at Chandigarh. Similar events would be organized for other R&D Centres around Delhi. The Section plans to invite university and college students to these events for an exposure to Optics R&D in the laboratories.

Major activities to be held soon:

- The XXXIII Optical Society of India(OSI) symposium on Optics and Optoelectronics. December 17-20, 2007 at Tezpur University, Assam [email: pps@tezu.ernet.in] Expected number of participants from India and abroad: 300.
- "National Laser Symposium" by the Department of Atomic Energy. December 18-20, 2007 at M.S. University, Vadodara, Gujarat.
- "International conference on Microwaves and Optoelectronics (ICMO-2007)." December 17-20, 2007 at Dr.B.A.M. University, Aurangabad, Maharashtra.
- "National Workshop on Advanced Optoelectronic Materials and Devices." December 27-29, 2007. Institute of Technology, Banaras Hindu University, Varanasi.
- "UK-IERI Workshop on Microstructured Optical fibres," January 5-7, 2008 at Central Glass and Ceramic Research Institute, Kolkata. [Organiser: Prof. B. Rahman, City University, London]
- "Indo-Japan Workshop on Recent Developments in Optics and Photonics," December 14, 2007 at IIT Delhi, New Delhi.
- PHOTONICS 2008, Dec. 15-18, 2008 in Delhi.

The subject of overlap between the events will be addressed in the future by better coordination among organizers.

SPIE student chapters and OSA Delhi Chapter organize regularly multiple events in different parts of the country for the promotion of activities related to optical sciences and engineering.

## **THAILAND:**

The project Shining-Spectrum-to-Society (SSS) is lead by another CREDO Member, Sarun Sumriddetchkajorn, Ph.D., Suwannee Phoocharoenchanachai . Activities include the following:

### Develop Photonics Educational Kits

- Contains 20 sets of electrical/optical components in a nice plastic box
- Can be used to demonstrate more than 17 topics from basic optics to applications in our daily life (e.g., energy conversion, fingerprint, scanner, light leveler)
- Comes with easy-to-follow manual called "Have fun with science using light" (written in Thai)

### Introduce Photonics to Society through a BOOK Photonics...the miracle of light

- Written in Thai
- Contains 22 chapters related on how basic optics has been used in everyday life (e.g., mirrors, prisms, gratings, holograms, compact discs, interferometers, digital cameras)
- Has been distributed > 1500 copies

### Demonstration on How Photonics is Used in Daily Life

- Grade 4-6 levels
- Donate Kit to Schools

Feedback from students after demonstration Have fun Learn a lot of things Please come back in the future. We will remember what you have taught. We will teach our brothers/sisters

### Future Work

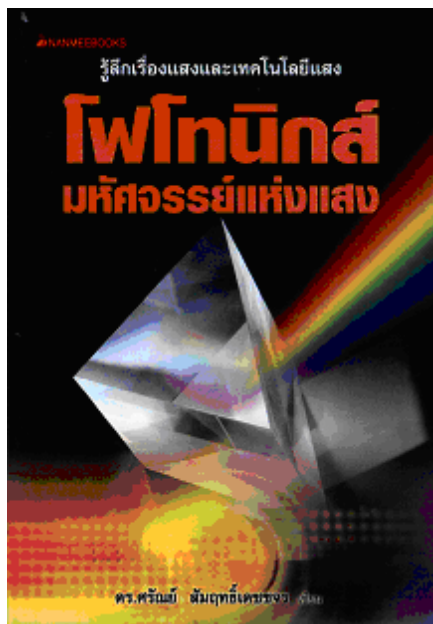
- Demonstrate on how photonics is used in daily life to 35 elementary schools
- Inspire high school students and persuade them to start working on science projects related to light

- Persuade students embedded with motivation and self-creativity to visit National Research Centers in Thailand to see how researchers/scientists do their work
- Nov. 13, 2007. Sarun Sumriddetchkajorn, NECTEC.
- Article to be considered for publication in ICO Newsletter. A Power Point Presentation is sent as an attachment to this report.

### Optics/Photonics Activities in Thailand

Sarun Sumriddetchkajorn, Ph.D.  
 Photonics Technology Laboratory  
 National Electronics and Computer Technology Center

We divide our photonics dissemination approach into 2 levels. One is the groundwork level where we intend to show general public the basic optics and its applications in everyday life. In this level, we work closely with local chapters of OSA, SPIE, and IEEE-LEOS on “Optics-to-School” project. Most of the optics kits used in the project is already available in the market but we still have to put all related materials associated with the kits by ourselves. In addition, we published last year an introductory book written in Thai entitled “*Photonics: the miracle of light*” and it has been distributed about 1500 prints in Thailand. However, we



An introductory book on “*Photonics: the miracle of light*”

have some obstacles on the way to inspire new generations to want to learn more about optics. So, this year, we plan to improve our communication skill and ways to interact with them. We will also develop our own optics kit demos as well as their related materials. By May this year, we can start disseminating optics/photonics to schools again and each school will have one set of our optics kit for use in the future.

Our next level is in the research level. Here, we had 5 local technical meetings from lecturers outside and inside Thailand. We have also provided SPIE Digital Library to our photonics researcher group in Thailand so that they can easily get in touch with those new scientific articles from the SPIE. So far, there have been 101 articles downloaded. Within this year, we plan to hold the third national conference on optics and its applications. This conference will bring researchers in Thailand as well as nearby countries to discuss topics related to new discoveries, innovations, and education.

## **AFRICA:**

Members of LAM Network have been organizing the Meeting in Ghana, and they are in direct contact with the ICO Secretary. Contact with other members of CREDO is poor. Zohra Ben Lakhdar put me in contact with the UNESCO organizer of the School on Active Learning of Optics. I will attend one of the Schools in Mexico in December 2007 in order to promote the organization of one in Colombia and will put Sarun in contact with UNESCO for the same purpose.

## **ICO 22 in Mexico.**

I want to express my personal support and that of the Iberian-American community to Mexico's proposal to host the 2011 ICO General Meeting.