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ICO Newsletter

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International Commission for Optics.

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Associate Secretary, in charge of Meetings : A.T. Friberg, Royal Institute of Technology, Department of Physics - Optics, SE-100 44 Stockholm, fax : +46 8 789 6672, ari.friberg@optics.kth.se

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Vice-Presidents, appointed : H.H. Arsenaute (SPIE), D.A.B. Miller (IEEE/LEOS), B.E.A. Saleh (OSA), T. Tschudi (EOS)

Report on the International Conference on Optical Science and Applications for Sustainable Development

April 10-14, 2000 Dakar, Senegal A. H. Guenther, President, International Commission for Optics*

Recently a most interesting and important meeting was held in Dakar, Senegal, the International Conference on Optical Science and Applications for Sustainable Development, the first ICO Topical meeting on the African continent. The conference was cosponsored by the Université Cheikh Anta Diop, Dakar, Senegal; The Abdus Salam International Centre for Theoretical Physics-Trieste, Italy; and the International Commission for Optics. Financial support from two ICO International Society Members, the Optical Society of America and SPIE, the International Society for Optical Engineering was appreciated. This extraordinary venue was indicative of the recognition of the importance and explosive growth of the global optics enterprise, as evidenced by the 80+ participants (46 from Africa from 15 different African nations: Algeria, Cameroon, Côte d'Ivoire, Egypt, Ghana, Kenya, Mali, Mauritania, Morocco, Nigeria, Rwanda, Senegal, South Africa, Sudan and Tunisia). The ICO had its annual Bureau meeting in conjunction with the conference and allowed many individuals from the ICO Bureau as well as invited speakers and contributing authors from America, Europe, Japan and Australia to give presentations at the aforementioned conference. Most importantly, several countries expressed a positive inclination to become ICO member nations or in one case to re-emphasize and revitalize their participation. Also, conference organizers had an opportunity to attract the attention of Senegal's newly elected President Abdoulaye Wade on the growing practical importance of optics for economy and development.

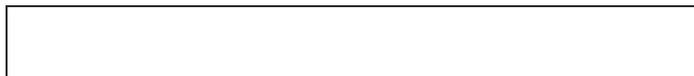
An important report highlighted the existence of LAM, the African Laser, Atomic, Molecular, and Optical Science Network, a loose confederation of members from 27 African nations focused mostly on the subject at hand. The coordinator of this group and the conference chairman was Professor A. Wagué, who was a most gracious host to the conference attendees in a superb atmosphere conducive to collegial communication. Society members of the ICO included the European Optical Society, Optics Within Life Sciences, and the SPIE. Speaking generally, the emphasis of the African presentations were mostly research oriented, equally divided between theory and experiment with an occasional specific application goal. Little of note from the commercial sector was noticed although it appears to very targeted. The African presentations were generally of high quality and gave one confidence in their work. Personally, having spoken with graduate students, I think there is little risk in attracting human resources for fellowships abroad or post-doctorals.

Another interesting bit of information was that South Africa is establishing a National Laser Center of South Africa April 1, 2000. The nucleus for the new center came from the termination of their laser isotope separation program.

Continuing on the education bent, there was great interest in discussions on clusters (Dr Bob Breault's) which appears to afford the ingredients to nurture the recognition of the growing importance of the need for photonics technicians. They hope to develop and improve their capability in this area, e.g., communications infrastructure. In fact, it was the final session that was devoted to the economic aspects of the photonics enterprise. The report on COSE, the Committee for Optical Science and Engineering, entitled "Harnessing Light, Optical Science and Technology for the 21st Century," was presented along with the availability of curricula for establishing 2-year post-secondary technician programs. Because of the stage of development in Africa most of the activity in electro-optics is in physics departments. The primary host for the meeting, the Université Cheikh Anta Diop has 23,500 students. I feel there was great opportunity for our established professional optical societies to interact with the African nations as part of their international outreach. ICO can play a major role as a facilitator in bringing partners together.

An item specifically addressed was a closer working relationship between ICO and TWAS, the Third World Academy of Science. All in all it was a most enlightening and unique experience.

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Two of the top African Optical Scientists meet the ICO Bureau in front of the Dakar Hotel Meridien Conference Center. Left to right, Colin J.R. Sheppard, Paul K. Buah Bassuah, Gert von Bally, Giancarlo Righini, Maria Luisa Calvo, Arthur H. Guenther, Ahmadou Wagué, Ari T. Friberg, Pierre Chavel, Toshimitsu Asakura, Henri H. Arsenaault, Asher A. Friesem, Anna Consortini



ICO's President Arthur H. Guenther, invited speaker Katarina Svanberg of Lund, Sweden and South Africa delegate Malik Maaza (second from right) visit Prof. Wagué's laser laboratory at Université Cheikh Anta Diop. Standing in the middle is graduate student Mamadou Diop.



ICO delegates meet with the Rector of Université Cheikh Anta Diop. Left to right: Pierre Chavel, Arthur Guenther, the Rector, Kararina Svanberg, Ahmadou Wagué and Malik Maaza.bb

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1998 ICO Traveling Lecture to Thailand, Singapore and Indonesia

By Suganda Jutamulia *

I traveled to Thailand, Singapore, and Indonesia in October 1998 giving an ICO Traveling Lecture. I was educated in physics department at Bandung Institute of Technology and optoelectronics graduate program at University of Indonesia, before I went to Japan for my doctoral study at Hokkaido University. Thus, this trip was somewhat like homecoming. The title of the lecture was "Optical Information Processing: from Fourier Optics to Near Field Optics".

The content of the lecture was a general review of optical information processing. The lecture was started with a discussion on wave. Light is wave, and wave is the propagation of energy. Information is the fluctuation of energy. Thus, for information processing, the change of energy over time or space is more important than the absolute value of the energy. Optical processor was then introduced based on Fourier optics. A thin lens can produce 2D Fourier transform at the speed of light independent of the size of data (input image). Based on the Fourier transform property of lens, we may perform spatial frequency analysis and synthesis in an optical processor. Thus, correlation (for pattern recognition) and convolution (for image enhancement) can be performed in real-time. Some practical examples were discussed in the lecture. The principle of hologram was explained. Applications of holography to optical storage, which were associative and distributive memory, were reviewed. The similarity of neural networks to holography was also discussed. The Fourier transform spectroscopy was presented and the application of the similar concept to Fourier transform fiber sensor was discussed. Finally, the lecture was about near field optics. Based on Fourier optics, we discussed why we could not get resolution better than diffraction-limited image in far field. The emerging technology of near field optics, which was able to produce resolution better than diffraction-limited image, was reviewed.

My first stop was Suranaree University of Technology in Nakhonratchasima, Thailand. The university is quite new university compared to other universities in Thailand. It was founded by the government as a center of excellent especially for that region. I was hosted by Dr. Joewono Widjaja and Prof. Vutthi Bhanthumnavin, Chairman of School of Laser Technology and Photonics. The lecture was attended by about 60 students and faculty members. Dr. Widjaja leads a research group and published papers from his own research in Thailand and collaborations with some leading research groups in Japan.

The second stop was Nanyang Technological University (NTU) in Singapore. The lecture was organized by the Photonics Research Group in the School of Electrical and Electronic Engineering. My host was Dr. Tuan-Kay Lim and Dr. S.C. Tam, the representative of Singapore in ICO. The lecture was attended by about 50 students, research fellows, and faculty members. The Photonics Research Group was set up in early 1994 to coordinate and spearhead research in the fields of photonics. It aims to be a center of excellence on photonics research and education in the region. The Group's coordinator is Dr. Y. L. Lam. The Group has published extensively in recognized journals. I was also received by Prof. Tan Hong Siang, the Director of Research at NTU.

Three lectures were given in Indonesia, the first was at Bandung Institute of Technology (ITB), which was organized by Department of Engineering Physics, ITB, and Indonesian Committee of Optics, and hosted by Dr. Andrianto Handojo, the representative of Indonesia in ICO and Prof. Bambang Hidayat, Director of Bosscha Observatory (also Vice President of International Astronomical Union). The lecture was attended by about 50 students, faculty members at ITB, and scientists and engineers associated with Indonesian Committee of Optics. The second lecture was given at University of Indonesia (UI), and attended by about 20 graduate students and faculty members of optoelectronics graduate program. My host was Dr. Hamdani Zain, the Director of the program. Surprisingly, researchers at ITB and UI that I met have long lists of publications in Applied Optics, Applied Spectroscopy, Journal of Physics D: Applied Physics, etc., based on their research work in Indonesia.

The third lecture was given at Universitas Pelita Harapan (UPH), a private university in Jakarta. The lecture was organized by Dr. John Batubara, the Head of Electrical Engineering Department, and attended by about 50 students and faculty in the same department. I was also invited by Dr. Januari Ritonga, the Director of University of Information Management and Computer Indonesia Mandiri (STMIK-IM) in Bandung, to visit the university. It is a new but energetic university, and I look forward to the rapid development of the university under Dr. Ritonga's leadership.

I like to acknowledge the support given by the ICO and also the hospitality given by all my hosts. Finally, I apologize for this late report.

* When the lecture was given, S. Jutamulia was the President of In-Harmony Technology Corporation, Petaluma, California. He is currently a Senior Member of Technical Staff with Blue Sky Research, San Jose, California, and on part-time faculty at San Jose State University. He is a fellow of OSA and SPIE.

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ICO Traveling Lecturer application form

ICO has established a Traveling Lecturer Program to promote lectures on modern aspects of optics in interested territories by scientists of international reputation with good lecturing skills. The program is aimed specially at developing nations, but is not necessarily restricted to them. As a rule, it is expected that the lecturer's local expenses will be met by the host institution and that ICO's contribution will be towards the travel costs. For the triennium 1996-1999, the ICO budget includes an amount of US\$5000 for the Traveling Lecturer Program. While an ICO Traveling Lecture may be given during a trip where the Traveling Lecturer is also an invited speaker at a conference, or a visiting scientist at a research institution for some period, the funds will be granted only for the presentation of a series of lectures on some active subfield of optics in one or preferably several laboratories in one (or several) foreign countries. This form should normally be submitted by the host (or one of the hosts).

Applications should be filed at the earliest possible time when plans start to be clear and sent to the ICO treasurer, Prof. Glenn T. Sincerbox, Optical Sciences Center, University of Arizona, Tucson AZ 85721, phone +1 520 621 4260, fax +1 520 621 4358, e-mail sinbox@cox.net

Name of traveling lecturer : _____
Address, fax, e-mail (as applicable) : _____ _____
Detailed route : institutions to be visited, person responsible for hosting lecturer at every institution, tentative dates, lectures titles _____
Name and capacity of person submitting application : _____
Address, fax, e-mail (as applicable) : _____ _____

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ICO/ICTP Award 2001: Call for Applications, Deadline is October 1st

ICO, the International Commission for Optics, and ICTP, the Abdus Salam International Centre for Theoretical Physics, Trieste, have agreed to establish a joint prize, called the ICO/ICTP Award. It is reserved for young researchers from developing countries (as defined by the United Nations), who conduct their research in a developing country. The award will be given to scientists less than 40 years old (on December 31 of the year for which the award is given), who are active in research in Optics and have contributed to the promotion of research activities in Optics in their own or another developing country.

The award consists of the following :

- 1) the ICO gives a cash amount of US\$1000 and a diploma.
- 2) The ICTP invites the winner to attend a three weeks College at Trieste at the next appropriate opportunity, and to give a seminar on his/her work when appropriate. ICTP will pay for travel and living expenses.

The award will be delivered to the winner at Trieste in the presence of representatives of ICO and ICTP. The award is given to one person every year. The winner is selected on the basis of nominations received by the Award Committee in response to a call published by both ICO and ICTP. The nominations must be documented by a complete curriculum vitae including a list of publications and selected reprints (no more than three) as well as a complete employment history and a description of the nominee's achievements for the promotion of research activity in developing countries.

<i>Joint Nomination Form</i>
Nominations should include the following :
Full name of nominee : _____
Nominator's name and address : _____
Nominator's signature, date _____
Date of birth of nominee : _____
Business address _____

Academic background

Education : College or University, Location, Major field, Degree, Year awarded

Academic honors

Employed history (position, organization, duties, dates)

Publications, patents, unpublished reports, papers presented at meetings, etc.

Honors and awards :

Scientific achievements for which the candidate is nominated for this award.

Nominators are encouraged to generate up to three supporting letters ; each supporting letter must come from a different country or ICO Territory and bring an additional information on the case.

Return this nomination form, together with supporting information, no later than October 1st, 2000, to the Award Committee Chair, Prof. Asher A. Friesem, the Weizmann Institute of Science, P.O. Box 26, Rehovot 76100 Israel, friesem@wicc.weizmann.ac.il, with a copy to Prof. Gallieno Denardo, Abdus Salam International Centre for Theoretical Physics, PO Box 586, I 34100 Trieste, Italie, denardo@ictp.trieste.it

Calls for applications for the 2001 ICO Prize and ICO Galileo Galilei Award will be published in the October 2001 issue of this Newsletter.

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Errata

1) Cuba: The correct electronic mail address for the new ICO Cuban Territorial Committee President is: augier@electrica.ispjae.edu.cu. A summary of the Territorial Committee's activities appeared in ICO Newsletter number 42, January 2000.

2) ICTP/ICO Award winner : Dr Arbab Ali Khan is the recipient of the 2000 ICTP/ICO Award. His name was misspelled in ICO Newsletter number 43, April 2000.

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Forthcoming Events with ICO Participation

4-7 September 2000

RomOpto 2000 (6th Conference on Optics)

Bucharest, Romania Prof. V.I. Vlad, Institute of Atomic Physics, NILPRP - Dept. of Lasers,
P.O. Box MG-36, R-76900
Bucharest, Romania
fax. +40 1 423 1791,
vlad@ifin.njpn.ro

15-17 November 2000

Intl. Conf. on Optical Design and Fabrication

Tokyo, Japan Dr. Kimio Tatsuno, Central Res. Lab., Hitachi Ltd.,
1-280 Higashi-koigakubo, Kokubunji, Tokyo
fax. +81 42 327 7673,
tatsuno@crl.hitachi.co.jp

3-7 September 2001

IV RIAO / VII OPTILAS

Tandil, Argentina Prof. G.H. Kaufmann, Inst. de Física Rosario (CONICET-UNR),
Bv. 27 de Febrero 210 bis, 2000
Rosario, Argentina
fax. +54 341 482 1772,
guille@ifir.ific.edu.ar

9-14 September 2001

ICO Topical Meeting, Information Optics

Tel Aviv, Israel Prof. Asher A. Friesem, Department of Physics of Complex Systems, Weizmann Institute of Science,
Rehovot 76100, Israel

fax. + 972 8 934 4109
friesem@wicc.weizmann.ac.il

27-30 November 2001

7th Conf. on Education and Training in Optics and Photonics (ETOP) 2001

Singapore Dr. Tuan-Kay Lim, School of Electrical and Electronic Engineering, Nanyang Technical University,
Nanyang Ave.,
Singapore 639798
fax. +65 791 2687/792 0415
etklim@ntu.edu.sg

17-22 March 2002

Optics in Computing 2002

Hsinchu, Taiwan
Prof. Chung J. Kuo, Graduate Institute of Communication Engineering, National Chung Cheng University,
Chaiyi, Taiwan 62107
fax. +886 5 272 2702
kuo@ee.ccu.edu.tw

25-31 August 2002

ICO-19, Triennial Congress of the International Commission for Optics "Optics for the Quality of Life"

Florence, Italy
Dr. Giancarlo C. Righini,
IROE "N. Carrara" - CNR, Via Panciatichi 64, 50127
Firenze, Italy fax. +39 055 412878
righini@iroe.fi.cnr.it

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[University of Cape Coast, Ghana to host workshop on Monitoring of air pollution due to Combustion Processes](#)

ICO has a tradition of cooperation with the International Centre for Science and High Technology (ICS-UNIDO), Trieste, Italy. The University of Science and Technology, Cape Coast, Ghana, which is also the seat of the ICO Territorial Committee Ghana/West Africa will host the ICS UNIDO Workshop on Monitoring of Air Pollution due to Combustion Processes, September 4-9, 2000. The event is being organized by the Laser and Fibre Optics Centre of the University of Cape Coast together with the Tema Oil Refinery, the Ghana National Petroleum Company, the Volta River Authority, the Ghana Environmental Protection Agency, and the Volta Aluminium Company. Topics will include optical diagnostics and calibration of lamps, DOAS and FTIR measurement techniques, general emissions from combustion processes, air pollution modelling, and the analysis of pollutants data. Information : lafoe@ncs.com.gh , fax +233 42 32446, attn Dr P.K. Buah Bassuah.

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