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ICS REGIONAL TRAINING COURSE ON OPTICAL DESIGN AND APPLICATIONS COMPUTERS

29 October – 3 *November* 2001 – DAKAR – SENEGAL

International Centre for
Science and High Technology
Trieste - ITALY

Université
Cheikh Anta Diop de Dakar
Dakar - SENEGAL

United Nations Industrial
Development Organization

FINAL REPORT

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Acknowledgement

The regional Training course was organised in Collaboration with the International Centre for Science and High Technology (ICS-UNIDO, Trieste, Italy) by the "Laboratoire Atomes Lasers"at the Department of Physics , Faculty of Science and Techniques, University Cheikh Anta Diop Dakar. The Training course was directed by Professor Ahmadou Wagué Department of Physics University Cheikh Anta Diop. The training course was sponsored by ICS-UNIDO and the Faculty of Sciences and Techniques. We would like to express our thanks to ICS-UNIDO and the Faculty of Sciences and Techniques for financial Support. We would like also to thank Professor Gallieno Denardo and Vanessa Varnier at ICS for having initiated the project and for their precious advises during the preparation of the training course.

I. General presentation of the activities

The opening session of the training course was presided on Monday 29 October at 9 o'clock at the Hotel Novotel -Dakar by Prof. Abdou Salam Sall , Dean of the Faculty of Science and Techniques, University Cheikh Anta Diop of Dakar. On his opening speech Prof. Sall underlined the importance of such training course for the University and Governmental authorities in Senegal. On his speech the Dean addressed thanks to UNIDO and ICS for their financial support and initiative in organizing a Training Course . Before the Dean of The Faculty the Director of the Training Course Prof. Wagué welcomed the lecturers and the participants and insisted on the fact that such regional course on optical design can contribute very positively to the achievement of the mission of African University in term of research and training activities. The Training course was held during 5 days. The ending session was followed by the round table and evaluation of the training course.

II. Scientific Activities

The Scientific activities of the training course took place at one of the Novotel Conference rooms. They were organised in the form of lectures and practical computer sessions on optics and optical design. The following subjects have been treated:

- Fundamental of optics including basics in light and glass, lenses, aberration, optical systems, optical instrument ,diffractive optics, and ray tracing

- Fundamental of lasers and lasers system including practical applications of laser spectroscopy in environmental monitoring and medicine
- Computer session with introduction to commercial and free software for ray tracing, aberration and diffraction , and laser analysis and design.

During the computer sessions held in the afternoons the participants had the opportunity to undertake independent exercise with the software available (Ray Tracing software "OSLO" and General Laser Analysis Design Software Glad) in all the computers (10 PC and two note books were available for the computer sessions):
The activities were scheduled from Monday 29 October to Friday 2 November every day from 9.00 to 13.30 with a coffee- break of 30 minutes and after a lunch break from 15.00 to 19.30 with also a coffee break of 30 minutes. During this period all the participants and lecturers shared lunch together at the Novel Restaurant which was an occasion also to have more discussions and more contacts between participants and lecturers
Saturday 3 November was devoted to visit at the University campus and excursion for guest lecturers and participants from Ghana, Cameroon, Ivory Coast, Mauritania and Great Britain.
The allocation of time for lectures and practical session, common lunches and coffee break allowed intensive scientific exchange throughout the week. The working language was French and English and the reproduction of all the documents facilitated exchanges in particular between participants and lectures coming from great Britain and other African countries. For more details on the scientific activities please see the program.

III. Round table and evaluation

The training course gave the participants and lecturers opportunities to debate during the round table and evaluation session.
The discussion held during the round table show the importance that must be given to optical science in Africa. The participants underline the necessity of such training course in order to strengthen building capacities in optics and optical design in the sub region. The participants gave a very positive appreciation of the Training course and formulate a need to continue with similar activities in optics in the region. During the discussion it was proposed to think about the opportunity of a creation of a manufacturing unit on optical design. The organizing committee has been congratulated by the participants for the perfect organisation of the training course and for hospitality in Senegal

IV. Results and Recommendations

The highly scientific level of lectures and practical sessions with computers, their appropriateness for the issues of optics for industrial development in Africa in the fields of optical design and manufacturing, the quantity and the quality of the participants' works as well as the fruitful discussions held during the training course enabled to draw from the training course appreciable and significant results.

1. the training course allowed to take stock of the recent developments in optics, optical design and manufacturing as well as software development in the field of ray tracing and laser analysis and their applications
2. the different participants have been sensitised to the role and importance of universities in the development of optical sciences and their application in Africa

3. The training course was also an opportunity to sensitise the local scientific community and the government authorities to the importance and need of collaborative action in the field of optics
4. One of the most important recommendations of the training course was to intensify exchanges between all the participants for the reinforcement of south-south as well as north south scientific cooperation. It was proposed for the follow up of the training course to see in collaboration with ICS-UNIDO how to create in the Region an optical design Manufacturing unit. Equally was emphasized the importance of the collaboration between universities school and industries for the development of optical sciences in Africa.

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Dakar 17 decembre 2002
Ahmadou Wagué