

Learning by Doing – Doing by Passion

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Abstract. *The paper is presenting the experience of Romanian SPIE (Society for Photo Optical Instrument Engineering) Student Chapter in organizing ISWLA '10 (International Student Workshop on Laser Applications) 25-28 May 2010 a conference organized by students for students. The SPIE Student Chapter, organized in Romania since 2001 is a professional association for students (under graduated, MSc. PhD, young researchers) affiliated to SPIE USA. SPIE is adopting a policy to enhance the interest for optics and photonics mainly among young people, by facilitating scientific contacts, grants, awards etc.. The paper is discussing this first experience faced by the team of students involved in the organization of a conference a challenge to develop new skills.*

Keywords. Student chapter, Grants, science, Competition, Good practices, Innovation, International contacts, excellence

1. Introduction

This year is the “laser celebration” at 50 years since the discovery of the first laser beam, a very prolific scientific period in the field of optics, photonics, chemistry and engineering.

This is the opportunity to recall the steps in the evolution of a modern domain of physics and interdisciplinary sciences, with a large diversity of applications. Charles Hard Townes from the University of California, Berkeley, California, one of the 4 scientists who received in 1964 the Nobel Prize for laser is the 2010 recipient of the SPIE Gold Medal of the Society .

In Romania the first laser He-Ne beam was obtained in 1962 and since, the domain was developed all along the years till nowadays. All along the years there were many scientists generations involved in laser design, fabrication and developing different laser applications: education, industry, medical etc.

The policy of the institute [1] was the formation of new generations of young scientists and the involvement in this modern domain of science. Many students developed MSc and PhD stages in the laboratories of the institute and became researchers, some already working abroad in States or Europe, with very good results.

The opportunity opened to Romania, as full member of EU since 2007 is of high importance as the access to EU funds allows the development of the scientific domain, by improving the scientific endowment and also to enhance the professional level of the scientists in the frame of the different human resource programs.

The possibilities to continue the professional development in high prestige universities and institutes, having access at modern equipment and facilities was a huge advantage especially in the last 20 years and after the EU joining of Romania.

The conference ISWLA '10 (International Student Workshop on Laser Applications) Bran, 25-28 May, 2010 <http://iswla10.inflpr.ro> is this year, the first scientific event devoted to lasers in Romania and the initiative belongs to SPIE Student Chapter.

There were several reasons to organize this conference: the laser celebration in the world, to present recent results in laser physics and applications, to discuss about new projects supported by EU among which the project ELI – Extreme Light Intensities a project that will involve different specialists- an opportunity for undergraduate student to think about a career in science.

The conference was supported by SPIE USA, OSA, the National Agency for Scientific Research, national institutes for research and development and other associations.

2. Results

The SPIE Student Chapter, affiliated to SPIE USA <http://spie.inflpr.ro/> was organized in 2001, the members are students (MS and PhD) enrolled

in the research institutes from the physics campus in Magurele.

It is not only an honor to belong to an international professional association and of high prestige on the side of famous scientists all over the world, but the membership facilitates the scientific contacts and many opportunities, especially for the young scientists. Such contacts represent not only a privilege for the members, but also a moral duty to be ever in competition with other scientists and with you yourself.



Fig. 1 Certificate of Recognition of the Romanian Student SPIE Chapter

The ever increasing interest of the international SPIE Board for the Student Chapters is realized by many ways: facility to attend conferences, grants offer, conference support, different publicity materials, participation of the elective president of the chapter at Annual SPIE Meeting organized every year in USA on the occasion of Photonics Conference in San Diego.

If the activity started quite slow because of lack of information and hesitations step by step students surpassed the doubts, mainly after the visit in Romania in 2004 of the SPIE elected president Professor James Bilbro and of the executive director Prof. Eugene Arthurs.



Fig. 2 Dialog between students and SPIE guests

During this visit in the laboratories and a seminary held in the institute, the dialog was very useful as the SPIE leaders encouraged students to apply for different projects and never give up, when the first trial failed. Since 2004 every year the elected president of the Student Chapter was able to attend the Annual SPIE Meeting. This first contact and the sincere dialog with the SPIE board members enhanced the confidence of the chapter members, who became more active and interested to use the opportunities offered by the professional society. It was possible to receive books from the available list and the news sent to members was useful. In 2009 Professor Pereira was invited to visit the institute and give lecture to students. Since 2008 ongoing the Polish Student Chapters invited Romanian students to attend their conference in Wroclaw and Turin and these contacts have been of high important to enhance the consciousness as researcher.

This conference was organized by students for students (MSc, PhD, undergraduate) and

members from other similar chapters from Armenia, Poland, Ukraine and Russia have been invited.. The conference was supported by SPIE USA, OSA (Optical Society of America) the National Agency for Scientific Research and the national institutes for research and development. Besides the scientific research in a national institute continues the activity of education for the formation of the young researchers and this is the duty of the senior scientists the leaders of research teams, by the coordination of the scientific activity, discovering the real skill of each of the team members and survey their development according to the natural gifts[2]. It is important that this coordination to be a friendly one and the young people to feel the interest of the leader for himself and to establish a collaborative and confidence relationship. Such a relationship is for both a constructive one. The young researchers have to feel the interest for their development and the support in order to be integrated into the team and participate to the team building.

The program was conceived for delivering courses, presentations from senior scientists regarding the status art of some very modern topics, oral presentations of the young researchers, students (MSc and PhD) but also under graduated students, working to elaborate the license thesis and poster session.

The lectures given by an expert regarding the craft of scientific presentations and writing held in a very interesting interactive way was much appreciated by the attendees. The illustration of the talk with convincing examples, the case studies, the concrete problems and situations asked to be solved by students by collective discussions, the professional authority of the professor was felt as a generous and friendly offer and had a strong impact.



Fig. 3 Comments and discussions during the interactive course

The common lunches, dinners and pleasant evenings favored the contacts and relationships. This is another form of communication in science, enhancing the approach of new ways of development in science, but also in the quality of human resources.

A complex and interesting experience

The organization of this conference was an experience both for students as for the senior scientists since every one discovered some features probable more difficult to be revealed in normal conditions in the daily activity.

The students prepared the papers and were coordinated and advised by their laboratories heads in order the conceived papers to be accepted for publication in ISI journals.

Among the projects supported by EU, the pan European ELI project - Extreme Light Infrastructure, in which Romania is one of the partner seems to be an attractive opportunity. The very high complexity of the project means the participation of experts from different specialties. Discussing about the project in this conference could enhance the interest for this project and the prospective for under graduated students attending the conference to choose a career in science.

The scientific program was seriously selected to cover a large topics – 9 invited conferences, 21 oral presentations held by young researchers and 3 undergraduate students and 27 posters. Imposing order in respecting the program, presence and evaluations in the poster session by senior scientists, the competition for the best oral presentations and best poster enhanced the interest of students.

It was not a classical conference, mainly with senior researchers presenting topics reviews, it was dominated by the presence of young people at the beginning of the career open to learn, to be better informed about scientific news and their opportunities. What is new is the youth spirit, the innovation, the interest to impose good practices, change ideas and establish scientific contacts in a friendly, joyful atmosphere.

All students, from under graduate to post-graduate level were encouraged to presents the ideas and projects at the conference by oral and/or poster presentations.

In this conference there were, as well, teachers from the pre university system and high school students involved in the project “Hands on science” coordinated by the Center for Science

Education and Training.
<http://education.inflpr.ro/>

The social interactions between participants have been promoted, as well, through the different entertainment activities, organized for each conference evening: welcome party and karaoke, visit to Bran Castle (named by many people Dracula Castle), traditional Romanian evening, dances and interactive demonstration of preparing a traditional sheepfold meal.

The conference was announced as well on our collaborators websites and also on the different important websites involved in optics and photonics such as: SPIE, OSA, IOP (<http://physicsworld.com>), National Institute for Laser, Plasma and Radiation Physics (http://www.inflpr.ro/module_Events/action_showEvent/id_13), International Association of Physics Students:

<http://www.iaps.info/2010/03/05/international-student-workshop-on-laser-applications-iswla10-25th-28th-of-may-10/>, students chapters website from Poland, Armenia

Communications group websites had been used to announce the conference (Facebook and Yahoo Groups).



Fig. 4 Happy people at the end of the workshop

Conclusions

The responsibility assumed by the students was a very creative one, as they solved new problems, besides conceiving scientific papers and they managed wonderfully.

The presence in the conference of the invited professors supported by SPIE from the list of traveling lecturers was highly appreciated by the students. The very friendly and warm atmosphere of collaboration and the franc

communication was another benefit of every attendee in this conference.

It was a pleasure duty to guide the event, encourage and advice the students. Personally, I tried to suggest, not impose, let students to decide according their options, to assume responsibilities and initiatives. I could say that it was a pleasant surprise to notice the ability to manage the economical problems, since nowadays it is not easy to face situations, when the budget for scientific research is every year lower, ongoing 2009 in Romania.

I have to say that young people is more flexible, has the skill to better accommodate to new situation and during the university studies increased the skill to manage the very different life situation in an economy in transit. For me it was surprising to discover the ability to manage. I enjoy noticing the capacity to collaborate, to share the tasks and do every thing easily, in a fair way.

On the other hand it is definitely sure that they still have to know and appreciate the results obtained by previous generations, select good practice and go on. In other countries the mentoring system is more frequent and useful.

This is not the first time to tell about the benefit of working on bridging generations for both partners. The benefit of the advisor is to notice growing up “the seeds”-informing, supporting, counseling, advising the young colleagues.

Probably it is too early to envisage the results but, what they did learn being engaged in this conference organization is a new professional lesson very useful in the future. This new experience of my young colleagues shows that they really have qualities as researchers and make me positive to believe, that they will manage well in all the future projects.

The responsibility is creative this is my conclusion and more confident we are in our young colleagues, higher are their possibilities to verify their skills.

References

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