14th IUVSTA SCHOOL

"Nano-Optics: from Principles to Basic Research and Applications"

April 11 to 15, 2016 in Braga, Portugal

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Fig.1 – Opening Session

The 14th IUVSTA School on **"Nano-Optics: from Principles to Basic Research and Applications"** http://nanoopticsschool.org/ was held in the International Iberian Nanotechnology Laboratory (INL) in Braga, Portugal, from Monday, April 11 to Friday, 15 April 2016. The School was organized under the leadership of Ana Cristina Gomes-Silva, Universidade Nova de Lisboa, Portugal (Secretary of NSD) together with Christian Teichert, University of Leoben, Austria (Chair of NSD). The local organizers were Carlos Tavares of Universidade do Minho, Braga, José Luis Ferreira of Universidade Nova de Lisboa and Jana Nieder of INL, Braga. The School was supported by the Bio-Interfaces Division as well as the Surface Science Division. Besides Lars Montelius, General Director of INL and President of IUVSTA, the International Scientific Committee was

recruited from National Representatives within NSD (Sidney R. Cohen, Israel, Vice-chair of NSD, Antonin Fejfar, Czech Republik, Steven Schofield, UK, Yves Huttel, Spain, Maja Buljan, Croatia, Hideaki Kasai, Japan, Ryszard Czajka, Poland, Nancy A Burnham, U.S., Katalin Balazsi, Hungary and Heiner Linke, Sweden).

Fig. 2 – Photo of the group [1]

The School focused on the most significant and hot-topics on Nano-optics and its applications in a multi-disciplinary basis, namely a) super-resolved

[1] Unfortunately not all participants are in the photo.

imaging/nano-imaging; b) nanoscopy; c) single-molecules techniques; d) nano (bio)-plasmonics and photonics; e) ultrafast and nonlinear optical processes; f) near- and far-field optics and g) human-centric lighting. Nine distinguished and prominent invited lecturers gave in a systematic and didactic fashion, during their exceptional tutorial lectures of 1 hour duration, a comprehensive overview on theory and basic/fundamental physics, experimental and applications reaching the frontiers of research and addressing the latest developments. The closing lecture (90 min) was presented by Prof. Thomas Klar, former student and collaborator of 2014 Nobel Prize Winner Stefan Hell.

Fig. 3 – Closing lecture presented by Prof Dr. Thomas Klar.

Within the nine invited lecturers coming from Austria, Poland, Denmark, Sweden, Israel, Spain and Chez Republik, two were female, representing 22.2 % of the invited lecturers. Moreover, for the success of the school and

to the privilege of the participants contributed the presence of the invited lecturers during the school week, encouraging and discussing with the students, whenever as possible. In addition, there were two sessions with all together five contributed lectures (30 min each) (Portugal, Singapore, Spain and USA) selected from the submitted abstracts, as well as two poster presentations including shotgun presentations (5 min) of the 23 presenters. From the 11 exhibitors and sponsors from Spain and Portugal (MTBrandão, MRA, Paralab, Caixa Geral de Depósitos, Sarspec, Photon Lines, PIMicos, Innova, FEI, ADMedida and Izasa Scientific) present 6 exhibitors took the opportunity given for short presentations of their technologies in a commercial session (one hour in total).

Fig. 4 – One of the poster session, while the other group was in the Nano-Optics tour.

Fig. 5 –Coffee break

In addition, the attendees visited the International Iberian Nanotechnology Lab (INL) in Braga in general as well as specific laboratories on an "INL Nano-Optics Tour" Divided in groups of 15 people and subgroups of 5-6 people. Demonstrations and posters were prepared, by the different researchers of the INL laboratory, specifically for the Nano-Optics tour.

Fig. 6 – One sub-group (5-6) before entering to a specific laboratory for practical demonstrations.

The school included a brain storming session on the future of the field with active participation of the students and lecturers.

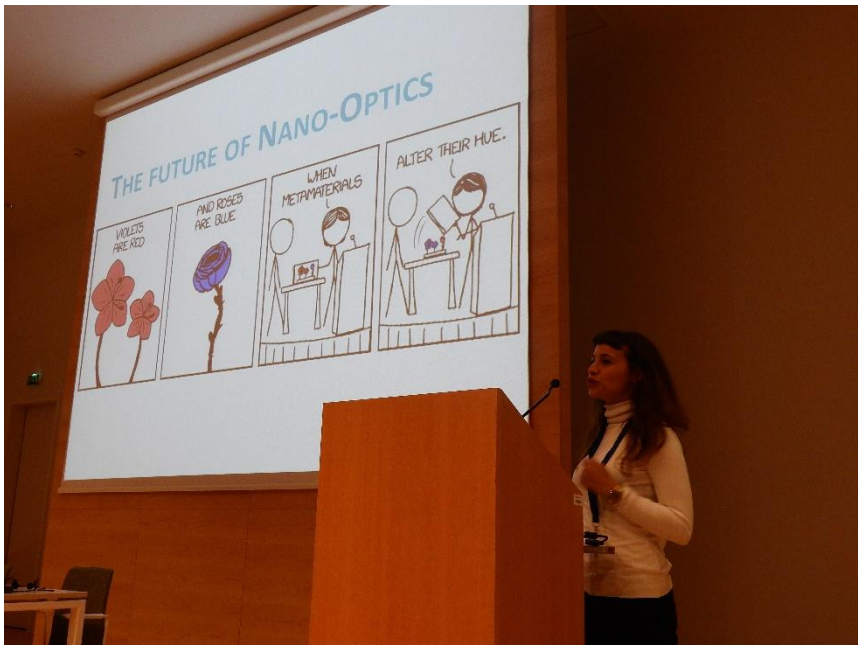

Fig. 7 – One student presenting the work developed in “Brain storming”

Finally, the participants evaluated School and the lectures. The winner of the best poster presentation was attributed to Upkar Kumar, from CNRS, France (picture below) with the poster title “Multimodal plasmonics in crystalline colloidal systems” with the prize money of 50% of the student fee, corresponding to 100 €.

Fig. 8 – Announcing the winner of the best poster presentation

Some figures:

- 64 total participants; 15 countries (Europe, Asia and USA)
- 9 invited lecturers (22.2 % female)
- 35 abstracts submitted
- 23 posters presented (39.17% presented by female, major not from biology)
- 5 contributed lectures
- 5 MSc. students; 19 Ph. d. students; 5 Post-doc
- 8 regular contributions
- 11 exhibitors and sponsors

Regarding social events, after the opening session with presentation of INL (Lars Montelius), presentation of IUVSTA and of the Nano-Optics School (Ana G.-Silva) and short presentation of SOPORVAC (Carlos Tavares), there was a welcome reception with Port Wine taste. On third day of the school there was guided excursion until Porto and around Porto downtown and historical part, followed by a guided visit to Porto Wine Cellars (Sandman) and taste, finishing with a guided boat trip in the Douro River

under the 6 bridges. The day finished with dinner in center of Braga at "Caldo Entornado".

Fig. 9 – Porto Wine Cellars

Fig. 10 – Boat Tour in Douro River

Fig. 11 – Dinner at “Caldo Entornado”

The school ended with a “closing remark” session chair by Christian Teichert and Ana G.-Silva, concluding that it had been a very successful and inspiring school, in which invited lecturers as well as participants were greatly engaged and involved in all activities contributing for the benefit and success of the school. At the moment, Ana G.-Silva is collecting the PDF of the lectures and of the posters presented to edit the final version of the Nano-Optics School book.

Financial Report of 14th IUVSTA School on Nano-Optics.

IUVSTA School -financial report	Total
EXPENSES	
Currency €	
Invited Lecturers	**7139**
Participants (Stud. Post-doc. Reg)	
Excursion + Bus+ dinner+ reception	3760
Lunch	1789
Coffee breaks	1825
School Facilities	7551.8
Book of abstract	843
Poster Prize	101
Travel agency secretariat	560
Stands rent	1216
Sub-Total	**17646**
Total Expenses	**24785**
INCOME	
Spsonsors and exhibitors	5285
Students fee	5800
post-doc fee	1860
regular fee	2465
IUVSTA	6000
INL	3000
TOTAlL Income	**24410**
Net for organization/Soporvac	**-374.8**

Per Category	Expenses	Income fee	Net
Students	11172	5800	**-5372**
Post-Doc	2291	1860	-431
Regular	2405.2	2465	59.8

Ana G Silva, 7 de Junho de 2016.