Report

12th IUVSTA School on
Laser Engineering of Surfaces and Coatings - LESC

13-19 July 2014, Isola di San Servolo, Venice (LESC 2014)

The School was organized in the framework of the IUVSTA activities within the Surface Engineering Division (SED), with support from the Thin Film Division (TFD), and in cooperation with the Venice International University (VIU), Politecnico di Milano, and the AIV - Associazione Italiana di Scienza e Tecnologia. The LESC2014 was recognized and supported as the 12th IUVSTA School. The co-chairmen of the school from IUVSTA (SED) were Prof. Paolo Ossi, Milano, Italy (Italian representative to IUVSTA) and Prof. Peter Schaaf, Ilmenau, Germany (Vice president of IUVSTA-SED). The 12th IUVSTA International School on Laser Engineering of Surfaces and Coatings (LESC 2014) was held on Isola di San Servolo, Venice, Italy, from 13th to 19th of July, 2014.

The school also included a presentation of IUVSTA, delivered by Prof. P. Schaaf, presenting its structure and its scientific and educational activities. The structure, divisions, conferences, and publications of IUVSTA were presented to the students and participants as well.

Although the School has been geared towards the level of a PhD student, advanced undergraduate and Master students, as well as postdoctoral researchers have joined in the school. In total, 33 students, mainly from EU, Russia (2), Far East (2), the USA (1), Iran (3; conducting their PhD in Vienna) have attended the School. The main purpose of the School has been to provide graduate students, PhD students and young research scientists working in the field of laser engineering of surfaces and coatings with robust fundamental roots that are often lacking in their training, so that they could profitably interact with colleagues working in areas neighboring, but not coincident, with their own research field. This research area usually involves plenty of questions related to vacuum science and technology.

The School encompassed various activities including a set of lectures imparted by 18 international experts in the field of laser-materials interaction and vacuum science and technology (the program is given below and at the web page http://www.slims.polimi.it/abstracts.html). The participation of students was enfostered through posters and brief oral contributions. Structured discussions among lecturers and students took place in dedicated sessions. Several “classrooms” enforced the discussion and questions of the students. Prices were awarded in a closing ceremony for the best students contributions. The school was concluded by a round-table discussion among all students and lecturers about the scientific experience, exchange and professional possibilities in the area of laser engineering of surfaces and coatings.

Questionnaires were filled by the students. There was a very positive response about the school, its contents and quality. Some minor critics were the short breaks between the lectures, which have been caused mainly by the intensive discussions developing after

the lectures between the students and the lecturers. The students participation was extremely active.

The financial report is submitted separately.

Some pictures of the school are attached.

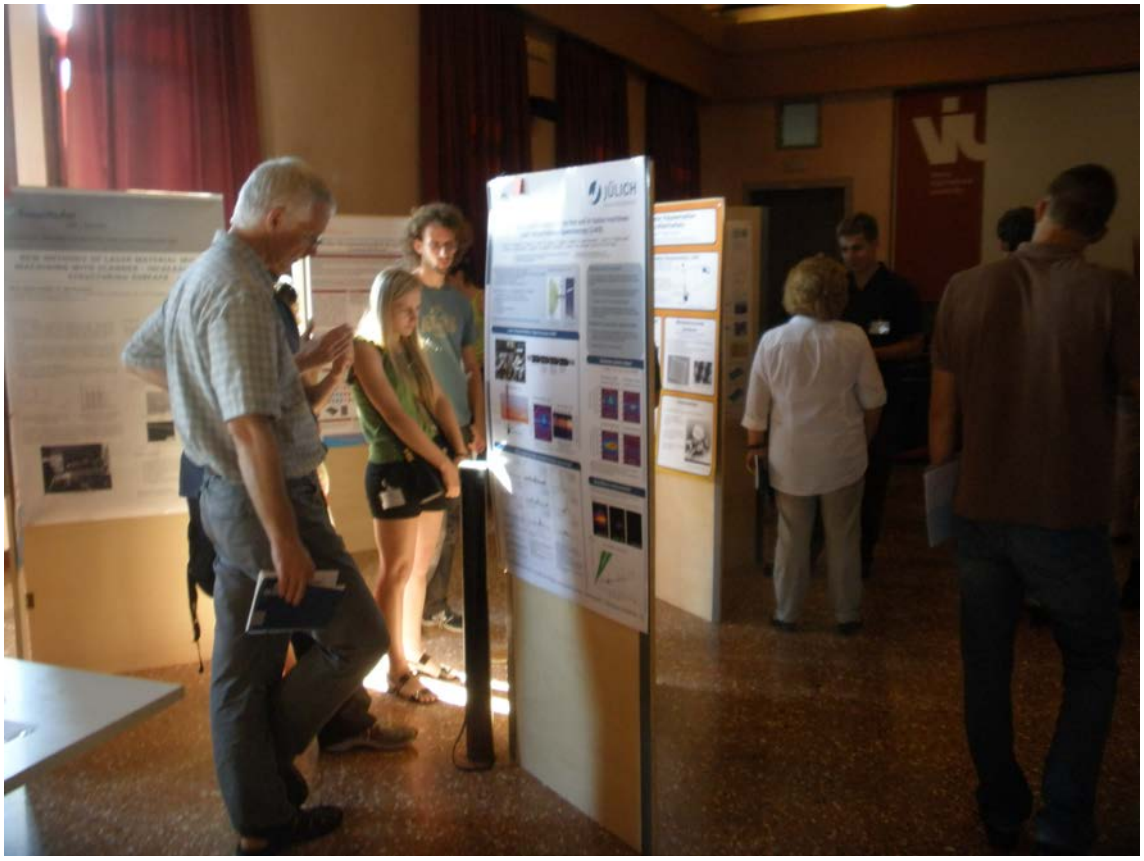
Peter Schaaf

Pictures of the 12th IUVSTA School

Group Picture

Poster award winners

Awards ceremony



Poster sessions with intensive interaction

Intensive discussions after the lectures.

Programme

12th IUVSTA School on Laser Engineering of Surfaces and Coatings - LESC
13-19 July 2014, Isola di San Servolo, Venice, Italy

Monday, July 14

08.45 – 09.15 Opening Ceremony and IUVSTA presentation

09.30 – 10.15 Lecture + discussion (Haglund: **Lasers and Optical Physics for Materials Science and Engineering)**

10.35 – 11.20 Lecture + discussion (Kautek: **Material response to laser energy deposition: non-thermal processes)**

11.40 – 12.30 Poster Session 1

12.35 Lunch

14.00 – 14.45 Lecture + discussion (Nisoli: **Attosecond Electron Dynamics: from Diatomic Molecules to Amino Acids)**

15.00 – 16.30 Oral presentations by students (8 presentations, 10 min each)

16.45 – 17.35 Classroom 1

17.45 – 18.50 Oral presentations by students (6 presentations, 10 min each)

19.00 Dinner

Tuesday, July 15

09.00 – 09.45 Lecture + discussion (Reif: **Material response to laser energy deposition (thermal and hyperthermal processes)**

10.00 – 10.45 Lecture + discussion (Sugioka: **Ultrafast laser micro and nano processing – From fundamentals to industrial applications**)

11.00 – 12.00 Oral presentations by students (5 presentations, 10 min each)

12.10 Lunch

13.30 – 14.15 Lecture + discussion (Caricato: **Fundamentals and Applications of MALDI and MAPLE**)

14.35 – 16.10 Oral presentations by students (9 presentations, 10 min each)

16.30 – 17.20 Classroom 2

17.30 – 18.50 Poster Session 2

19.00 Dinner

Wednesday, July 16

09.00 – 09.45 Lecture + discussion (Lu: **Optical Imaging and Spectroscopy of Laser-Induced Plasmas**)

10.00 – 10.45 Lecture + discussion (Leborgne: **Laser Induced Plasma and Applications (fs/ns effects)**)

11.00 – 11.45 Lecture + discussion (Stratakis: **Ultrafast laser processing of organic photovoltaic materials**)

12.00 – 13.00 Classroom 3

13.15 Lunch

19.00 Dinner

Thursday, July 17

09.00 – 10.30 Oral presentations by students (8 presentations, 10 min each)

10.50 – 11.35 Lecture + discussion (Miotello: **Laser versus ion induced sputtering**)

11.45 – 12.30 Lecture + discussion (Bulgakova: **Models of pulsed laser ablation based on continuum methods**)

12.45 Lunch

14.00 – 14.45 Lecture + discussion (Geohegan: **Laser Interactions to Understand and Control the Growth of Nanostructures and Thin Films: From Nanoparticles and Nanotubes to Graphene and Beyond**)

15.05 – 15.50 Lecture + discussion (Zhigilei: **Atomistic and coarse-grained molecular dynamics simulations of laser-materials interactions**)

16.10 – 18.00 Poster Session 3

19.00 Dinner

19:30 – Social activity in S. Servolo

Friday, July 18

09.00 – 09.45 Lecture + discussion (Dinescu: **Functional oxide thin films obtained by Pulsed Laser Deposition**)

10.00 – 10.45 Lecture + discussion (Castillejo: **Flying Nanostructures: laser control and applications of soft nanomaterials**)

11.05 – 11.50 Lecture + discussion (Mihailescu: **Organic and/or inorganic nanostructured layers for applications in biocide, drug delivery, biomimetic or biosensing coatings**)

12.00 Lunch

13.45 – 14.30 Lecture + discussion (Schaaf: **Industrial applications of laser-materials processing**)

15.00 Guided tour at a cultural event in Venice downtown

19.00 Dinner

Saturday, July 19

09.00 – 09.45 Lecture + discussion (Ossi: **Controlled deposition of nanoparticles from laser-produced plasmas**)

10.00 – 11.00 Round Table (topic to be confirmed)

11.20 – 12.30 R. Kelly Award Ceremony and Closing Remarks

12.35 Lunch

END