



Training School within the Laserlab Europe

Laser Plasma EUV sources for application in nanotechnology and bioengineering

Subject: Laser plasma EUV sources for application in nanotechnology and bioengineering

Local Organizer: Institute of Optoelectronics, Military University of Technology, Warsaw

Laboratory: Laser-Matter Interaction Laboratory (LMI Lab)

Date: 19-20.04.2012

Number of participants: 8-10 (2 groups of 4-5 students)

Detailed programme and aim of the Training School:

The Training School will be carried out at the Laser-Matter Interaction Laboratory (LMI Lab) that poses an unique equipment and know-how on generation of extreme ultraviolet (EUV) from laser plasma sources for application in nanotechnology and biomedical engineering. The sources are based on a laser-irradiated gas puff target approach. During the school it is planned to perform lectures to introduce students into the subject and give background knowledge needed for the practical activities in the laboratory. The laboratory training will be oriented on the use of the sources in EUV micro- and nanoprocessing polymers and EUV nanoscale imaging and radiography.

The lectures will be given by the recognized specialists in the field. The titles of the lectures are as follow: (1) *Laserlab Europe opportunities for students and Early Stage Researchers*, (2) *Introduction to laser plasma physics and EUV radiation*, (3) *EUV optical systems*, (4) *Laser plasma EUV sources based on a gas puff target*.

The laboratory training will be performed at the laser laboratories using two experimental setups equipped with the laser plasma EUV sources and in the diagnostic laboratory equipped with two scanning electron microscopes. The subjects of the laboratory training are following: **(1) Laser plasma EUV source for micro- and nanoprocessing polymers**, **(2) Nanoscale imaging and radiography using a laser plasma EUV source**. The laboratory training will be provided under the supervision of the experienced specialists from the hosting laboratory who will be assisted by the doctorate candidates involved in research for their PhD theses.

The aim of the Training School is to make students familiar with a new technique of generation of EUV light using a laser-irradiated gas puff approach, to teach them measurements techniques that are used for characterization of laser plasma EUV sources, to study a new method of processing organic polymers using EUV light and to use EUV sources for nanoimaging and radiography.

Detailed information on the **Training school** and the application procedure are given at the LMI website: (www.ztl.wat.edu.pl/zoplzm).

Time schedule:

Date	Activity	Time	Group	Lecturers - Trainers	Presentation Title/Training Subject
19.04.2012	Lecture	9:30 – 10:00	1,2	D. Chorvat	Laserlab Europe opportunities for students and ESR
	Lecture	10:00 – 10:45	1, 2	M. Fajardo (<i>to be confirmed</i>)	<i>Introduction to laser plasma physics and EUV generation</i>
	Coffee Break	10:45 – 11:00			
	Lecture	11:00 – 11:45	1, 2	L. Pina (<i>to be confirmed</i>)	<i>EUV optical systems (tentative)</i>
	Lecture	11:45 – 12:30	1, 2	H. Fiedorowicz	Laser plasma EUV source based on a gas puff target.
	Lunch Break	12:30– 14:00			
	Laboratory training (4 hours)	14:00 – 18:00	1	A. Bartnik	Laser plasma EUV source for micro- and nanoprocessing polymers
2			P. Wachulak	Nanoscale imaging and radiography using a laser plasma EUV source	
20.04.2012	Laboratory training (4 hours)	9:00 – 13:00	1	P. Wachulak	Nanoscale imaging and radiography using a laser plasma EUV source
			2	A. Bartnik	Laser plasma EUV source for micro- and nanoprocessing polymers
	Lunch Break	13:00 – 15:00			
	Closing remarks	15:00 – 16:00			