

Call for Early Stage Researcher in the Institute of Microelectronics, NCSR Demokritos

www.imel.demokritos.gr

within the Marie Curie Initial Training Network (ITN), *Surface Physics and Advanced Manufacturing (SPAM)*

http://www.euvlitho.net/internet/Folder/123103_welcome.aspx



**National Centre
for Scientific Research
NCSR Demokritos, Athens
GREECE**

- A multidisciplinary Research centre for Physical Sciences
- 8 Institutes, ~1200 people
- The Institute of Microelectronics- IMEL, is one of the 8 Institutes and has ~ 70 people

- IMEL - A GREEK CENTER OF EXCELLENCE IN MICRO- NANO TECHNOLOGIES AND MICROSYSTEMS
- Small clean room facility, plus satellite laboratories, plus simulation and design teams.
- IMEL offers (with NTUA and NKUA two master courses: Micro-Nano Systems and Microelectronics.
- IMEL has over 30 PhD students, receiving their degree from collaborating universities

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The Institute of Microelectronics seeks to employ for 12 months an *early stage researchers* (ESR) within the framework of the *European Marie Curie Training Network SPAM (Surface Physics for Advanced Manufacturing)*. The work could be part of their PhD thesis (although this is not required).

3) Job Description

Title: Plasma cleaning of organic contaminants from high quality reflective surfaces using vacuum and/or atmospheric pressure plasmas

More detailed description:

High quality mirrors are used in next generation lithography systems to reflect light at 13.5nm wavelength used to image the nanoelectronic devices of the future. Although the mirrors are in vacuum, gas contaminants still deposit carbon on their high quality surfaces reducing reflectivity. Plasma processes in vacuum or in atmospheric conditions have therefore to be used in order to remove those contaminants without damaging the reflective surface, and without inducing nanoroughness on the surface. The candidate will construct an atmospheric plasma system, and use an existing low-

pressure, high-density plasma system to evaluate cleaning procedures in various plasmas. Spectroscopic ellipsometry will be used as an in-situ diagnostic for the organic contaminant thickness. Plasma process simulation will be employed to understand and predict the plasma cleaning process. The gained experience is valuable as a surface processing technique in various fields.

Further reading:

- Graham, S., Steinhaus, C., Clift, M., Klebanoff, L., *Radio-frequency discharge cleaning of silicon-capped Mo/Si multilayer extreme ultraviolet optics*, Journal of Vacuum Science and Technology B: Microelectronics and Nanometer Structures 20 (6), pp. 2393-2400
- Bárdos, L., Baránková, H., *Plasma processes at atmospheric and low pressures*, Vacuum 83 (3), pp. 522-527

2) **Qualifications:** Candidates must have a Masters in Physics, or Engineering or Chemistry, and should be qualified to start a PhD in a European University, or have started one already, or have 2-3 years of research experience independently or as part of their PhD thesis. In case the candidate is already working in a related PhD thesis, communication with the thesis advisor may be needed.

Strong background in most of the skills listed below is required: Experimental skills with thin film processing, plasma processing, ability and experience to design and construct a home made apparatus, Electromagnetics, Computer skills and programming, Surface Chemistry and Physics. Excellent Use of the English Language oral and written is required. Knowledge should be proven with Cambridge / Michigan Proficiency or at least Advanced Degree for non-native English Speakers, and / or high score TOEFL tests and /or other equivalent certification.

3) Nationality and other Requirements:

a) *Early Stage Researcher* is a researcher who is in the first 4 years of his/her research career (full time equivalent), beginning at the date which would formally entitle him/her to embark on a doctorate degree.

b) Furthermore, the researcher must NOT be of Greek Nationality and must not have resided or carried out his/her main activity in Greece for more than 12 months in the last 3 years. European Union Nationality is preferred, but not required.

Details for the definition of Early Stage Researcher, about nationality, and about the network can be found in

ftp://ftp.cordis.europa.eu/pub/fp7/docs/fp7-mga-annex3intramulti_en.pdf

and http://www.euvlitho.net/internet/Folder/123103_welcome.aspx.

4) Contact point: Dr Evangelos Gogolides, evgog@imel.demokritos.gr

Send applications to : plasma-support@imel.demokritos.gr

Expected Starting Date: September 2011