Within the framework of the Marie Curie Initial Training Network "SIMDALEE2" (**S**ources, **I**nteraction with **M**atter, **D**etection and **A**nalysis of **L**ow **E**nergy **E**lectrons) we are inviting applications for **2 post-doc positions** - **ER**s (Experienced Researchers).

SIMDALEE2 is a 4 year project funded by the European Commission consisting of 11 renowned research institutes and 3 companies from 9 European countries. The overall objective is to establish a world-class research training platform for the science and technology of nanoscale manipulation and analysis using low energy electrons. Apart from an effective and well structured training program, the network will pursue the following scientific goals:

1. Put the theory of field-emission on a modern basis taking into account the 3-dimensional shape of the emitter and relate it to the lateral resolution of microscopy using field emission sources.
2. Certified model for the interaction of low energy electrons with solid surfaces;
3. Optimisation of lensless imaging and electron detection in a strong field ambience.
4. Electron beam modification of nanostructured surfaces;
5. development of a prototype Near-Field-Emission Scanning Electron Microscope
6. the investigation of the economic impact and feasibility of low energy electron beam methodology.

Within this interdisciplinary and intersectoral network, the ESRs and ERs will have the opportunity to improve their scientific and complementary skills and greatly further their career opportunities in S & T in Europe.

How to apply?

1. Go to http://www.simdalee2.net/ - Vacancies
2. Click on any of the APE vacancies in the left most column of the table.
3. Read the description of the planned work and the skills required by the applicants.
4. Fill out the SIMDALEE2 application form
5. Submit your application consisting of your CV, the application form and a cover letter stating the Job Ref. Nr. in the subject line to: office@simdalee2.net and jobs@aperesearch.com
6. In the cover letter, try to describe how your previous experience shall enable you to effectively contribute to the outlined goals.
7. Please make brief statements on whether you have a good command of the listed skills or make it clear on the basis of which previous experience it can be expected that you shall be able to master these skills in a reasonable time after starting this work.
8. The **deadline** for the current stage of the selection procedure is **March 31st, 2015**

General Requirements Pertaining to all Vacancies:

Post-Doc candidates: PhD in Physics or equivalent

Eligibility criteria:

- The equal opportunities recruitment policy is applicable, female candidates are encouraged to apply, i.e. in the event of equally suitable candidates preference will be given to a female candidate.
- Experienced Researchers must (at the time of recruitment by the host organisation): be in possession of a doctoral degree or have at least four years of full-time equivalent research experience. At the time of recruitment by the host organisation an experienced researcher must also have less than five years of full-time equivalent research experience.
- It should be noted that an individual researcher may not be recruited first as an ESR and subsequently as an ER in the same project.

Conditions of Mobility of Researchers

- Researchers can be of any nationality. They are required to undertake trans-national mobility (i.e. move from one country to another) when taking up their appointment. One general rule applies to the appointment of researchers:
- At the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date.
- Short stays such as holidays and/or compulsory national service are not taken into account. As far as international European interest organisations or international organisations are concerned, this mobility rule does not apply to the hosting of eligible researchers. However the appointed researcher must not have spent more than 12 months in the 3 years immediately prior to their recruitment in the same appointing organisation.
- Note that the mobility rule applies to the partner where the researcher is recruited, and not to partners to which the researcher is seconded.

This page describes -in final detail- the work to be carried out in the framework of the **two PostDoc at A.P.E.Research srl (APE)**.

The two PostDoc at the APE will **both be of experimental nature**. In particular, the **planned work is described below and the skills required by the applicants are outlined**. When submitting your application, **try to describe how your previous experience shall enable you to effectively contribute to the outlined goals**. Note that we do not expect you to have experience exactly matching the described work (although this would of course be highly beneficial for your application). For example, if you have general experience with UHV-equipment, or surface analysis techniques using electrons or similar work-relevant experience, please try to state this clearly in your application.

Also, **please make brief statements on whether you have a good command of the listed skills** or make it clear on the basis of which previous experience it can be expected that you shall be able to master these skills in a reasonable time after starting this work.

The specific training and research objectives at APEResearch are:

ER1 "Construction of NearField Emission AFM prototype at ambient conditions"

Starting from June 2015 the aim of the work at APE Trieste are:

- Modification and development to add existing AFM the NF operation mode ;
- Development of low noise preamplifier for NF -AFM.
- Project and development and application of mechatronic components
- Theoretical approaches applied to electronics
- Assembled NF AFM prototype
- Sample test images on NF AFM prototype to verify lateral and vertical resolution in AFM mode
- Field emitter tests
- Implementation and testing of electronic instrumentation for reducing noise

The following **research visits** are presently envisioned for the successful candidates, where they will have the opportunity to get hands-on knowledge of several electron beam technologies, deepen their understanding of these techniques and other project-relevant science and technology :

- JSI (Ljubljana, Slovenia) Sample preparation, working on understanding NF AFM field emitters
- NTUA (Athens, Greece) Design of low noise preamplifier for NF-AFM, working on optimization NF AFM resolution and sample stability

ER2 "Implementation of Near Field Emission AFM in UHV"

Starting from October 2016 the aim of the work at APE Trieste are:

- Modification and development of existing NF AFM-SEM in UHV operation mode at ETH;
- Study and development of Secondary Electron Detector (SED) at ETH;
- Support to Secondary Electron Detector (SED) development
- Sample test images on NF AFM UHV prototype at ETH
- Study and test on Secondary Electron Detector (SED)
- Characterization and preparation of probes for UHV prototype
- First report on economic impact on LEE methodology

The following **research visits** are presently envisioned for the successful candidates, where they will have the opportunity to get hands-on knowledge of several electron beam technologies, deepen their understanding of these techniques and other project-relevant science and technology :

- ISI (Brno, Czech Republic) Secondary Electron Detector implementation on NF-AFM
- ETH (Geneva, Switzerland) Implementation of NF-AFM in UHV

Preferred skills of successful candidates (or skills to be acquired soon after starting the work):

- good command of the English language in speech and writing
- clarity in exposing physical ideas and presenting physical results in written form (i.e. reports, theses, publications)
- ability and willingness to achieve the goals stated above in a small team (2-4 hardworking people)
- support the management of the project
- support the organisation of project meetings etc.
- good knowledge of solid state physics and/or surface physics
- IT skills (operating a PC for writing a text document, producing graphs, editing a doku-wiki webpage)
- experience in AFM and STM development
- experience in UHV techniques
- basic knowledge in digital electronics and data-acquisition

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