



Project Acronym: KESTCELLS

Project title: Training for sustainable low cost PV technologies: development of kesterite based efficient solar cells. (Grant agreement no: 316488, FP7-PEOPLE-2012 ITN, Multi-ITN)

The Marie Curie Initial Training Network Kestcells is recruiting 1 **PhD position (early stage researchers)**. KESTCELLS is a network for the structured interdisciplinary training of researchers in advanced thin film photovoltaic (PV) technologies. The project proposes the development of new technologies compatible with the cost, efficiency, sustainability and mass production requirements that are needed to become a reliable and future alternative to conventional non renewable energy sources. With this objective in mind, KESTCELLS network will focus on the development of kesterite based solar cells.

The consortium is formed by research institutes, universities and companies with strongly complementary expertises. All these aspects are relevant for the definition of a structured interdisciplinary training programme for the formation of high level researchers that will be required in Europe for the development of competitive PV technologies

The candidate will work in the framework of the KESTCELLS Project, being part of a Project with a high level consortium, formed by Research Groups that are reference groups in the Thin Films Photovoltaic field in Europe. This will ensure a career development in a highly professional environment, with training in the different aspects of the Photovoltaic Technology, from fundamental material science aspects, to growth techniques in thin films technology, characterization, innovation and industrial implementation, entrepreneurship, etc. A complete training program will include local training activities, as well as network wide activities (thematic and network workshops, intensive courses), and several stays at Academic and Industrial sites.

Research fields:

Thin Films Photovoltaics, Kesterites, $\text{Cu}_2\text{ZnSn}(\text{S,Se})_4$, Physical Vapour Deposition, Chemical Routes, Characterization, Modelling, Solar Cells

Elegibility criteria:

- The ITN project is subject to a very restricted mobility criteria: candidates are required to carry out trans-national mobility when taking out they appointment. At the time of recruitment by the host organization the newly recruited researcher must not have resided or carried out his/her main activity in the country of the host organization, for more than 12 months in the 3 years immediately prior to his/her recruitment under the project. Compulsory national service and/or short stays such as holidays are not taken into account. The researcher may be of any nationality.
- The candidate must be a EARLY STAGE RESEARCHER as defined in the ITN programme. This means that at the time of the recruitment he/she has not been awarded the doctorate degree and is in his/her 4 first years (full time equivalent) of his/her research carrer, counted from the data of obtaining the diploma that gives the rights to embark in a doctoral degree.

The recruitment process will be open, transparent, impartial and equitable following the guidelines of the European Charter of Researchers. Applications will be collected by the coordinator and distributed to the members of the consortium.



Position 1: Modelling and simulation of kesterite based cells. Design of optimal cell configurations. (Code ESR5.1)

Country: France

Institution: Aix Marseille University (AMU)

Duration: 36 months

Incorporation: January 2013

Deadline for applications: November 30th 2012

Laboratory: IM2NP

Head of the Laboratory: Rachid Bouchakour

Group: OPTO-PV

Group Leader: Ludovic Escoubas

Fellowship Supervisor: L.Escoubas J.Simon

Field: Photovoltaics

The Ph.D. candidate will carry out a multidisciplinary activity with the final aim to develop and adapt software tools for the modelling and simulation of kesterite based solar cells. The candidate will also design optimal devices in terms of efficiency by studying alternative materials and dimensions for back contact and buffer layers. Modelling of devices with gradual band-gap layers for optimal absorber in-depth composition profiles will be also a part of the PhD research program. Optical and electrical properties of the various materials composing kesterite solar cells will be also measured. Finally, comparisons between modelling of the cells and experimental characterizations will be performed.

The recruited candidate will be involved in the following training activities:

- 1 secondment of 3 months at Helmholtz Zentrum Berlin
- 1 secondment of 3 months at Nexcis (France)
- 1 industrial secondment of 1 month at Abengoa Solar (Spain)
- Participation in 5 specialized Workshops
- Participation in two intensive courses in management and business
- Participation in all the Project Meetings

Requirements: Candidates must hold/have a Master degree in Solid State Physics or Optoelectronics or Optics or Microelectronics or Nanophysics at the time of the recruitment. It is indispensable a good background in Semiconductor Physics and in Optoelectronics, to be self-motivated, committed and curious, creative and able to think independently. Computing skills is required. Optics and electric measurement skills of semiconductor materials are welcomed. Excellent command of English (French is also an advantage) is also required. Also, it is required that at the start of contract, the candidate has not been yet awarded the doctorate degree and is in the first 4 years (full-time equivalent) of his/her research career.

Salary: Monthly remuneration according to Marie Curie ITN Rates (<http://cordis.europa.eu/fp7/people>).

Submission of the candidacy: candidacy has to be submitted via e-mail to kestcells@irec.cat and ludovic.escoubas@im2np.fr, including the following documents (please specify the code ESRX.X in the application):

1. CV including photo and personal data
2. Degree diploma
3. Certificate of records of the degree including marks average



4. Master diploma or certificate
5. Certificate of records of the master including marks average
6. Motivation letter
7. Letter certifying that the candidate fulfils the international mobility criterion.

Additional information: www.kestcells.eu or kestcells@irec.cat