

**EDITAL PARA A ATRIBUIÇÃO DE BOLSAS NO ÂMBITO DE PROJECTOS E INSTITUIÇÕES DE I&D**  
**(VERSÃO EM INGLÊS)**

Title: Postdoctoral Scientist Position

**Topic:** Nanostructures for light trapping and transparent electronics in thin film solar cells

The research center CENIMAT, of the Faculty of Sciences and Technology of “Universidade Nova de Lisboa”, has an open vacancy for a Postdoctoral researcher within the project UID/CTM/50025/2013 of the associate laboratory I3N (Ref.<sup>a</sup> LA0025), financed by national funds via the FCT/MEC and co-financed by FEDER within the Partnership Agreement PT2020.

**Scientific areas:** Applied Physics, Materials Science and Nanotechnology

**Required qualifications:**

- a) PhD degree related with nanotechnological applications, preferably in the areas of nanophotonics and photovoltaics
- b) Experience in nano-fabrication and nano-scale characterization
- c) Solid background in electromagnetism
- d) Fluency in English

**Work plan:** The researcher will develop thin film solar cells by incorporating nanophotonic structures, for light trapping and improvement of the collection of the generated photocurrent. The photonic structures will be fabricated using colloidal lithography. Their morphology and optical properties will be analyzed by employing advanced materials characterization techniques, such as nano-scale microscopy and various spectroscopic tools. The structures will be integrated in silicon solar cells, deposited in distinct substrates, with the aims of:

- 1) Maximizing the generated photocurrent by increasing the light absorption in their material
- 2) Improving the electrical response using the colloidal structures as masks for the fabrication of innovative transparent metallic electrodes.

The nanostructures and the photovoltaic devices will be fabricated in clean room laboratories and characterized by state-of-the-art equipment available in the facilities of CENIMAT-I3N.

**Relevant legislation:** Law 40/2004, of 18 August in the decree 202/2012 of 27 August (Statute of the Scientific Research Fellow); Legislation of Research Scholarships of “Fundação para a Ciência e Tecnologia”, I.P. – 2013 ([www.fct.pt/apoios/bolsas/regulamento.phtml.pt](http://www.fct.pt/apoios/bolsas/regulamento.phtml.pt)).

**Host institute:** The work will be developed in the research center CENIMAT ([www.cenimat.fct.unl.pt](http://www.cenimat.fct.unl.pt)), of the Faculty of Sciences and Technology of “Universidade Nova de Lisboa” (FCT-UNL), under the supervision of Dr. Manuel João Mendes and Prof. Hugo Águas. CENIMAT is integrated in the associate laboratory Institute for Nanostructures, Nanomodeling and

Nanofabrication (I3N) which was recently ranked within the top 11 national R&D centers evaluated as “Exceptional” by the Portuguese Ministry of Science and Education. For more than 25 years, CENIMAT has been participating in several national and European projects in the field of optoelectronic sensors, biosensors, solar cells and thin film transistors. The Materials and Nanotechnology group involved, MEON, has a strong activity in design, modelling and fabrication of advanced multifunctional nanostructured silicon thin films, oxides and dielectrics at micro and nanoscale dimension processed via chemical and physical routes, for a broad range of applications.

**Duration of Post-doctoral scholarship:** The selected candidate will be attributed a one-year scholarship, starting in September 2015, that can be renewed by equal periods until the end of the project that funds the position.

**Monthly allowance:** The net monthly salary of the scholarship is 1495€, paid via bank transfer to the selected candidate and not subject to taxation. The scholarship is attributed via the “Fundação para a Ciência e Tecnologia”, of the Portuguese Ministry of Science and Education, and the amounts are established by national regulations regarding research scholarships (<http://alfa.fct.mctes.pt/apoios/bolsas/valores>).

**Selection method:** The candidates will be selected according to the following criteria: CV evaluation (30%), experience in the area of the project (70%) and, when necessary, an interview will be performed.

**Members of the selection panel:**

**President of the Jury** - Rodrigo Ferrão Paiva Martins

**Members of the Jury** - Manuel João de Moura Dias Mendes and Hugo Manuel Brito Águas

**Alternate Members** - Elvira Maria Correia Fortunato and Luis Miguel Nunes Pereira

**Announcement of the selection results:** The final evaluation results will be presented in a list ordered by grade, which will be published in a public area of CENIMAT-I3N. The selected candidate will be notified via e-mail.

**Application deadline and procedures:** The call for candidates will be open from 27 May to 26 June 2015. The application must include a motivation letter, describing the experience of the candidate in the field, and the following documents: CV, copy of the qualifications certificates and ID card.

The applications can be delivered either in person, in the address of CENIMAT-I3N (Campus da Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa, Quinta da Torre, 2829-516 Caparica), or by e-mail to [cenimat.secretariado@fct.unl.pt](mailto:cenimat.secretariado@fct.unl.pt) and [mj.mendes@fct.unl.pt](mailto:mj.mendes@fct.unl.pt).