** Template**

**JSPS POSTDOC POSITION ANNOUNCEMENT**

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| TITLE: | J**SPS Post-doctoral fellowship, LIMMS/CNRS-IIS, Japan: Nano-scale characterization of solar cell materials by photo-assisted scanning probe methods** |
| KEYWORDS: | scanning probes, solar cells, photo-carrier dynamics |
| Description of recruiting organization: | The Laboratory for Integrated Micro Mechatronic Systems (LIMMS) is a joint laboratory between the Centre National de la Recherche Scientifique (CNRS) and the Institute of Industrial Science (IIS) of the University of Tokyo, based in Japan. It was founded in 1995 to conduct international cooperative research projects in the field of micro-nanomechatronics and was upgraded to UMI (Unité Mixte Internationale) of CNRS as well as an international collaborative research center of IIS. LIMMS has 20 years of experience in international cooperative research and has welcomed more than 160 researchers from France. The 2 years postdoctoral fellowship position starting on October 1, 2016 will be based in the Institute of Industrial Science of the University of Tokyo, at the Laboratory of Professor Takahashi. |
| Description of position to fill: | This project aims to analyze local dynamics of the photo-generated carriers in solar cells by means of various photo-assisted scanning probe methods, and consequently to contribute toward developing the solar cells with very high conversion efficiency. In the solar cells, it is very important to understand the dynamics of the photo-generated carriers. In addition, the multi- or micro-crystalline materials which should include a lot of grains and their boundaries have big advantage for the solar cells owing to their low fabrication cost, and therefore the non-uniformity of the characteristic among the different grains and the influences of the grain boundary on the photo-carrier dynamics should be carefully and locally investigated. For such purposes, the scanning probe methods are very powerful because of their very high spatial resolution, and we have already developed the photo-assisted Kelvin probe force microscopy (P-KFM) and the photo-thermal atomic force microscopy (PT-AFM) to investigate the photovoltaic properties and the non-radiative recombination properties of the photo-carriers, respectively. In this project, we will extend those methods to analyze the photo-carrier dynamics in more detail in the micro-crystalline solar cell materials, like CIGS [Cu(In,Ga)Se2] materials. In addition, we will develop a photo-capacitance AFM (PC-AFM) as a novel method to identify the discrete energy levels in the band gap which should act as a recombination center of the photo-carriers. Furthermore, since it is well known that CIGS has a specific band diagram inside of the grains as well as around the grain boundaries leading to built-in electric fields, the influence of those band diagram on the photo-carrier dynamics will be investigated very locally by means of the various photo-assisted scanning probe methods, and based on those knowledge we will aim at finding the guidelines for developing a novel solar cell with very high conversion efficiency.  |
| Application deadline: | February 28th, 2016 |
| Candidate profile:  | Doctor graduate researcher with skills in electronics engineering and material science |
| CONTACT: | Please send to limmsadm@iis.u-tokyo.ac.jp - Curriculum vitae - Motivation letter - At least two references and/or recommendation letters - A statement of research experience and interests |
| Additional information: | **Location:** LIMMS/CNRS-IIS Institute of Industrial Science University of Tokyo 4-6-1 Komaba, Meguro-ku Tokyo 153-8505, Japan **Position** Start date: October 1, 2016 Fellowship of 2 years by the Japan Society for the Promotion of Science **More information:** http://limmshp.iis.u-tokyo.ac.jp |
| Skills | Electronics and Material Science  |
| Skill 2 | Engineering  |