



Post-doctoral position

**Active devices based on perovskite materials for visible light communications:
light-emitting diodes and/or photodetectors**

Employer: University of Limoges, CNRS (France)

Workplace: XLIM Research Institute, Limoges, France (www.xlim.fr)

Expected starting date: 02/2015 – 04/2015

Gross salary: around 2300€ per month

Keywords : hybrid perovskite, light-emitting diodes, photo-detectors, visible light communications, Material Sciences, Optoelectronic devices

Scientific supervisor: Dr. Johann Bouclé, Associate Professor HDR

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A post-doctoral position is proposed at the XLIM laboratory for the development of perovskite-based optoelectronic devices to be used in the field of visible optical communications (VLC). VLC are indeed expected to become a relevant alternative to radiofrequency wireless communication technologies as they offer several advantages, such as secured data transmission, open and free bandwidth, no interferences with the electromagnetic radiations, or no health issues. LED sources are today perfect candidates for VLC as they can simultaneously be used for lighting and data transmission, if their emission can be modulated at high rates. In this context, low cost technologies are still required in order to compete with the existing inorganic gallium-based white LED technologies, which also suffer from slow response time.

Important breakthrough have been recently demonstrated in the field of hybrid perovskite semi-conducting materials, both for solar energy conversion and light emission. In this context, we have initiated a new research axis at XLIM devoted to the development of low cost optoelectronic devices based on perovskite materials for VLC, including LED and photo-detectors. This program involves two complementary research groups specialized in material characterization and device processing, as well as in optical data transmission.

The open post-doctoral position is therefore required in order to develop efficient perovskite light-emitting diodes (PeLED) and characterize their commutation properties. Especially, the successful candidate will focus on the achievement of large bandwidth devices, by varying the main physical properties of the perovskite emitter (nature, crystallinity, morphology) and by tailoring the interfacial layers. He or she will also carry out regular discussions with our partners regarding the specifications required for efficient visible light communications. Finally, the candidate will also be involved in the demonstration of efficient photo-detectors based on perovskite active layers, in order to participate to the demonstration of a VLC chain based on perovskite devices.

The candidate will take benefit from the PLATINOM technology platform at XLIM.

Profile of the candidate:

The postdoctoral position is open from the end of 2015 / beginning of 2016. We are looking for a highly motivated young researcher presenting a relevant experience in the general field of light emitting diodes, solar cells, and photo-detectors. Some experience in perovskite materials or optical communications will be appreciated. The ideal candidate also demonstrates good experimental skills, as well as suitable team working abilities. Good communication skills will also be highly appreciated.

Applicants must send their cover letter, a detailed CV including a list of publications, as well as two references, to:

Dr. Johann Bouclé

XLIM UMR 7252, MINACOM/Equipe Optoélectronique Plastique

Université de Limoges/CNRS

Email: johann.boucle@unilim.fr

Website: <http://www.xlim.fr/en/minacom/plastic-optoelectronics>