



Post doc position in  
**Nanocrystal based infrared  
optoelectronics**

The goal of this post doc is the development of photodetectors operating in the mid and far infrared. The project aims to design and characterize photodetectors based on narrow band gap nanocrystals as active material. The candidate will be in charge to develop a photovoltaic (PV) detector based on vertical and nanotrench geometries. Compared to “conventional” PV device for solar cell, the challenge comes from the fact that the device has to be purely inorganic to prevent the absorption resulting from C-H bond. The candidate will have to experiment different strategy of integration of the nanocrystal by modifying their surface chemistry using both chemical and physical approaches. Finally the candidate will be involved in the optoelectronic characterization (photoresponse, noise and detectivity).

The candidate will have to work at both INSP (UPMC – for the device part) and LPEM (ESPCI – for the chemistry part), both located downtown Paris, France. The project will be funded by Nexdot a spin-off from the ESPCI’s group. The candidate will work under the supervision of Emmanuel Lhuillier. The position is funded up to 3 years on a yearly basis.

### **Skills**

The candidate **must have an experience in the field of nanocrystal based devices operated in vertical geometry** (solar cell, LED, photodetector). The candidate needs to be self-motivated and hard worker. Being a English or French speaking will be necessary.

Additional skill such as the one listed below will be a plus but are not mandatory

- Nanocrystal synthesis
- Material characterization (TEM, SEM, XRD, FTIR, UV vis)
- Micro nanofabrication in clean room
- Experience with cryogeny
- Infrared detector characterization
- Work with ROIC and FPA

Interested candidates can send a resume to [el@insp.upmc.fr](mailto:el@insp.upmc.fr) with a full list of publication and detailed experiences. The resume also needs to include three names of references