POST-DOC POSITION AT MATERIAUX ET PHENOMENES QUANTIQUES (MPQ) LAB AT PARIS DIDEROT UNIVERSITY (France)

A postdoc position for the project "**Multi-terminal architecture in molecular junctions: towards electrical and optical gating**" is currently open at the Matériaux et Phénomènes Quantiques Laboratory at the Paris Diderot University.

The main goal of the project is to control the electronic response of large area molecular junctions either with an electric field or with light by means of an innovative approach in device fabrication. The candidate will develop new planar geometries allowing high aspect ratio nanotrench between two metallic electrodes where a thin active molecular layer electrochemically grafted will be embedded. Such architecture will be exploited to investigate mostly two class of molecular layers, one based on bisthienyl-benzene (BTB) and the other on anthraquinone (AQ). Electric or optical gating is expected in the first case to allow control on the rectification effect already demonstrated in BTB molecular junction [1], while in the second case it is very promising to control the quantum interference effect revealed in the vertical AQ based junction configuration [2,3].

The candidate should hold a PhD in Physics. Basic knowledge and experience in solid-state physics and electron transport in nanoscale systems is a prerequisite. Skills in clean room fabrication technologies as well as in low temperature electronic transport measurements are also required. The applicant should be highly motivated, open for new approaches and techniques.

The position will be available for 1 year with the possibility of extension for a second year in the TELEM team of the MPQ laboratory. The whole project will be supported by the technological facilities located at MPQ, such as a clean room fully equipped for micro and nano fabrication and different cryostats for electron transport measurements (VTI, cryofree cryostat, dilution refrigerator). Grafting of the molecular layer is realized in the framework of a longstanding collaboration with chemistry department at Paris Diderot university.

Please send a CV and the names and addresses of two references to M.L. Della Rocca (maria-luisa.della-rocca@univ-paris-diderot.fr) and P. Lafarge (philippe.lafarge@univ-paris-diderot.fr).

[1] P. Martin et al., JACS **134**, 154 (2012)
[2] C. Bessis et al., Sci. Rep. **6**, 20899 (2016)
[3] C. Salhani et al., Phys. Rev. B **95**, 165431 (2017)

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Contract duration: 1 year (renewable 1 year)
Start date: as soon as possible
Requested qualification level: PhD
Workplace: Laboratoire Matériaux et Phénomènes Quantiques, Université Paris Diderot