



Control of molecule/metallic interfaces by light

Post doc position open in the STM group of MPQ

A one-year post-doc position is opened in the laboratory “Matériaux et Phénomènes Quantiques” which is a joint research unit of Université de Paris and CNRS. At the heart of a world capital city, Université de Paris is a fully multidisciplinary, in terms of both training and research. For its part, the MPQ laboratory specializes in the study of frontier quantum materials and in the development of novel quantum devices.

Scientific background

Spin crossover molecules (SCO) are promising building blocks for the development of molecular spintronics as they present two spin states that can be switched from one to the other thanks to external stimuli such as light, temperature or pressure. But, the incorporation of such materials in actual devices needs a deep understanding of the molecular spin crossover property on metallic and ferromagnetic surfaces down to the single molecular level. The ultimate goal would be the control of the molecule/ferromagnetic interface properties by external means such as light. To this purpose, we thus combined complementary techniques (Scanning tunneling microscopy, x-ray absorption spectroscopy or grazing incidence diffraction) to probe the properties of SCO monolayers in direct contact with a metallic substrate [BAI16, BAI18, FOU19].

Objectives

The aim of this project is to create photoswitchable molecular/ferromagnetic interfaces which can be controlled by light and to investigate their structural, electronic and magnetic properties. To perform this study, the future post-doc fellow will combine STM, Magneto-optical Kerr effect measurements and X-ray measurements such as absorption spectroscopy or grazing incidence diffraction.

The position will be for one year. The work will be realized in the context of the multi-partner European FET-Open project COSMICS that started in November 2017.

[BAI16] K. Bairagi et al., Nat. Commun., 7, 12212 (2016)

[BAI18] K. Bairagi et al., J. Phys. Chem. C, 122, 727 (2018)

[FOU19] C. Fourmental et al., J. Phys. Chem. Lett., 10, 4103 (2019)

Experimental techniques: Scanning tunneling microscopy (ultra-high vacuum, low temperature), Kerr effect magnetometry, synchrotron measurements (surface diffraction and X-Ray absorption).

Required skills: Strong background in surface science and condensed matter, taste for experimental research, teamwork attitude.

Salary: This position is remunerated with a gross monthly salary between 2235 € and 2766€ depending on the former research experience. After standard deductions, the net salary will be between 1800 and 2257 €, which includes unemployment insurance, work-site insurance, health insurance and pension plan.

Application deadline: 28th February 2020 **Starting date:** 1st April 2020

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