

Institut des Sciences Chimiques de Rennes

UMR 6226 CNRS - UNIVERSITE DE RENNES 1



263, avenue du Général Leclerc – Campus de Beaulieu
35042 RENNES CEDEX (FRANCE)



Laboratory : ISCR - UMR CNRS 6226 – Université de Rennes1 – team OMC- PMM

Web page : <https://iscr.univ-rennes1.fr/omc/phosphorus-molecular-materials>

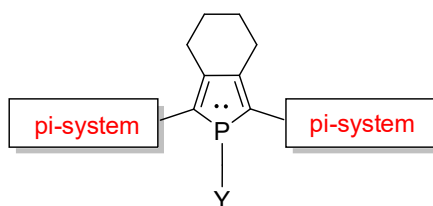
Contact: Pr. M. Hissler : muriel.hissler@univ-rennes1.fr; 02 23 23 5 83

Context

π -Conjugated oligomers and polymers based on a planar backbone of sp^2 -bonded C-atoms have attracted increasing interest in recent years owing to their potential application for sensing applications. Effectively, polymeric materials can provide selectivity from their intrinsic nature (e.g. polar or nonpolar, aromatic or hydrocarbon, etc.), functional groups, and the presence of well-defined receptors. For example, π -conjugated polymers have been used to detect different gases and metal ions. However, the ultimate materials for chemical sensors will need to satisfy additional criteria, including the ability to amplify a transduction event, a high stability to temperature and/or solvents, and an easily measurable transduction signal.

Project: The aim of this project is the development of highly sensing materials which can be used for the development of field effect transistors (OFETs). This PhD project gathers 3 french laboratories (ISCR-Rennes, IETR Rennes, Polytechnique) in the frame of an ANR program (PolyPCS, <http://www.agence-nationale-recherche.fr/Projet-ANR-17-CE07-0016-02>). In particular, the group in Rennes is internationally recognized for the development of P-containing π -conjugated oligomers and polymers and their use for opto-electronic application.¹

The main task of the PhD student will be the development of synthetic methods, easy to implement, reproducible and that permits to obtain large quantities of sensing oligomers and polymers. The new compounds will be fully characterized including UV-Vis absorption, fluorescence, and cyclic voltammetry. The incorporation of these compounds in OFETs will be done in the lab of our partner. The PhD student will have the possibility to participate to these collaborations through short stays in the corresponding laboratories.



Application : *Master degree in molecular chemistry or equivalent diploma. A strong background in organic/organometallic synthesis is required. Additional skills in photophysics and electrochemistry are a plus. CV+ motivation letter + 2 recommendation letters*

Starting : sept./oct. 2018.

Salary : 1400 € /month.

Localization : Institut des Sciences Chimiques de Rennes (France) (<https://iscr.univ-rennes1.fr/>).

¹ *J. Am. Chem. Soc.* **2012**, 134, 6524; *Org. Lett.* **2013**, 15, 330; *Chem. Eur. J.* **2014**, 20, 9784; *Chem. Eur. J.* **2015**, 21, 6547; *Chem. Soc. Rev.* **2016**, 45, 5296; *Chem. Sci.* **2017**, 8, 4264.