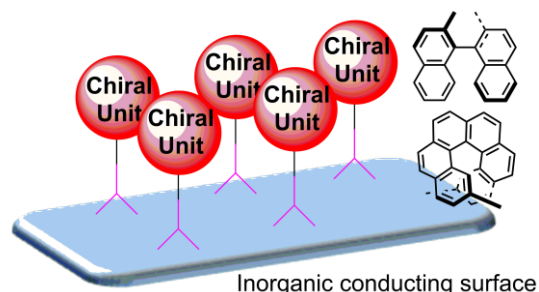


PhD position 2018-2021 : « **ki-Surf** »

Synthesis of chiral molecular architectures for electrode functionalization and applications in asymmetric catalysis and chiral recognition

The « ki-Surf » PhD project will consist in developing innovative chiral electrodes, based on the immobilization of chiral organic and organometallic molecular systems onto inorganic conducting surfaces. The resulting hybrid systems will present a molecular chirality with tunable photophysical properties (absorption and luminescence) from the visible to the near-infrared region, associated with the electronic conductivity of the inorganic electrode (Figure 1). The expected synergy from this hybrid association will be studied in details and will allow us to generate chiral radicals which may be applied in asymmetric synthesis, chiral sensing,^[1] or transduction of circularly polarized light.^[2]



The main part of the project will be devoted to the synthesis of chiral organic and organometallic molecules with different electronic properties and the study of their photophysical and chiroptical properties (UV-vis absorption, circular dichroism, circularly polarized luminescence) in solution and immobilized on surfaces.^{[3],[4]} Applications in asymmetric synthesis and chiral electrochemical sensing will then be conducted depending on the obtained chiroptical properties.

This PhD position is open in the group of Dr. J. Crassous, within the Organometallics: Materials and Catalysis team at the Institut des Sciences Chimiques de Rennes. This group is internationally recognized for its contribution to organometallic chemistry of chiral helicenic compounds displaying appealing photophysical properties for chiral optoelectronics applications (OLEDs, photovoltaics).^[3, 5]

We are looking for a highly motivated Ph.D. candidate with a strong background in organic/organometallic chemistry. Experience/interest in photophysical properties will be an added value. In addition, a strong motivation for research and good communication skills are required (fluent English or French speaking is mandatory).

Salary ~ 1370 €/month,

Please send your records (CV + marks + recommendation letters) to:

- **Dr. Ludovic Favereau**, ludovic.favereau@univ-rennes1.fr, tel : 02 23 23 68 91

- **Dr. Jeanne Crassous**, jeanne.crassous@univ-rennes1.fr, tel : 02 23 23 57 09

[1] a) G. Mirri, S. D. Bull, P. N. Horton, T. D. James, L. Male and J. H. R. Tucker, *J. Am. Chem. Soc.* **2010**, *132*, 8903-8905; b) F. Sannicolo, S. Arnaboldi, T. Benincori, V. Bonometti, R. Cirilli, L. Dunsch, W. Kutner, G. Longhi, P. R. Mussini, M. Panigati, M. Pierini and S. Rizzo, *Angew. Chem. Int. Ed. Engl.* **2014**, *53*, 2623-2627; c) S. Arnaboldi, T. Benincori, R. Cirilli, W. Kutner, M. Magni, P. R. Mussini, K. Noworyta and F. Sannicolo, *Chem. Sci.* **2015**, *6*, 1706-1711; d) C. Wattanakit, *Current Opinion in Electrochemistry* **2018**, *7*, 54-60.

[2] Y. Yang, R. C. da Costa, M. J. Fuchter and A. J. Campbell, *Nat Photon* **2013**, *7*, 634-638.

[3] N. Saleh, C. Shen and J. Crassous, *Chem. Sci.* **2014**, *5*, 3680-3694.

[4] a) H. Isla and J. Crassous, *C. R. Chim.* **2016**, *19*, 39-49; b) K. Dhbaibi, L. Favereau, M. Srebro-Hooper, M. Jean, N. Vanthuyne, F. Zinna, B. Jamoussi, L. Di Bari, J. Autschbach and J. Crassous, *Chem. Sci.* **2018**, *9*, 735-742.

[5] a) C. Shen, G. Loas, M. Srebro-Hooper, N. Vanthuyne, L. Toupet, O. Cador, F. Paul, J. T. Lopez Navarrete, F. J. Ramirez, B. Nieto-Ortega, J. Casado, J. Autschbach, M. Vallet and J. Crassous, *Angew. Chem. Int. Ed. Engl.* **2016**, *55*, 8062-8066; b) N. Hellou, M. Srebro-Hooper, L. Favereau, F. Zinna, E. Caytan, L. Toupet, V. Dorcet, M. Jean, N. Vanthuyne, J. A. G. Williams, L. Di Bari, J. Autschbach and J. Crassous, *Angew. Chem. Int. Ed.* **2017**, *56*, 8236-8239; c) P. Josse, L. Favereau, C. Shen, S. Dabos-Seignon, P. Blanchard, C. Cabanetos and J. Crassous, *Chem. Eur. J.* **2017**, *23*, 6277-6281.