The PhD project will consist in designing innovative chiral luminescent molecular materials and use them as emissive dopants to develop Organic Light Emitting Diodes (OLED) able to generate circularly polarized (CP) electroluminescence. This PhD position is open at the “Institut des Sciences Chimiques de Rennes” (ISCR – UMR 6226 CNRS) within the Organometallics: Materials and Catalysis team and under the supervision of doctors Ludovic Favereau and Jeanne Crassous.

CP Luminescence (CPL) has received increasing attention due to its potentialities in future photonics applications such as 3D displays, information storage and processing or spintronic-based devices.[1] Recently, the development of CP-OLED has emerged as a potential direction for increasing the energy efficiency of conventional OLED displays in which 50% of the light emitted is suppressed using linear and circular polarizers to reduce the external light reflection. This high energy loss can be overcome by using chiral compounds as emissive materials in OLED devices to generate circularly polarized electroluminescence that can pass these filters without any attenuation, resulting in higher display performances in terms of autonomy and contrast.[2] In this PhD project, we intend to synthetize new CPL emitters possessing thermally activated delayed fluorescence (TADF) property to develop CP-OLED with 100% external quantum efficiency (EQE). This multidisciplinary research project is part of a national consortium (funded from the French National Research Agency - ANR), namely iChiralight, involving experts in synthesis, photophysical properties and OLED technology and will be an excellent opportunity for the PhD candidate to acquire scientific and soft skills valuable for academic and professional careers.

The main part of the project will be devoted to the synthesis of chiral organic molecules with different electronic properties and the study of their photophysical and chiroptical properties (UV-vis absorption, circular dichroism, circularly polarized luminescence) both in solution and solid state.

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 ~ 1600 €/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