Pr. François ESTOUR
francois.estour@univ-rouen.fr
Phone: +33 235 522 921

UMR CNRS 6014 – Laboratoire COBRA
Université de Rouen
IRCOF – 1 rue Tesnière
76821 Mont Saint Aignan Cedex (France)

POST-DOCTORAL POSITION

The host laboratory will be the UMR 6014 CNRS (COBRA) based in Rouen (Normandy). The research developed within COBRA (BioOrganic Chemistry group) is oriented towards organic chemistry and analysis. In terms of excellence in scientific research and training, the UMR 6014 COBRA is integrated into the strategic axes of the regional pole CBSB (Chemistry, Biology, Health and Well-being), notably through the Normand Institute of Chemistry INC3M and a National Laboratory of Excellence in Organic Chemistry (Labex SynOrg) recently renewed in 2019 for 5 years. The laboratory is also a member of the Carnot I2C and the University Research School XL-CHEM, selected as part of the EUR call for projects from PIA3. This triptych XL-Chem – SynOrg – Carnot I2C is now part of a unique continuum at the national level Training - Research – Technological Transfer in the field of chemistry with strength links with industries.

Position to be filled: Post-Doc, 12 to 24 months from January 2022

Research field: Molecular Imprinted Polymers as Enzyme Mimics for Decontamination of Sulfur and Organophosphorus Toxic Derivatives

Key words: chemistry-biology interface, organic chemistry, supramolecular and macromolecular chemistry, cyclodextrins, nerve agents, vesicants

Financial support: ANR project

Working language: English, French

Context and Objectives: Chemical warfare agents (CWA) and pesticides are a major concern related to defense and public health issues. Among them, vesicants and nerve agents are considered to be the most nefarious and dangerous compounds. The synthesis of chemical weapons being quite easy, they potentially attract terrorist groups and facilitate their use in asymmetric conflicts. Intoxications are possible because large stockpile of military grade nerve agents and sulfur mustards still exist in many countries, despite the signature of the Chemical Weapons Convention. Furthermore, OrganoPhosphorous (OPs) compounds are still used in agriculture and constitute one of the most widespread pesticides worldwide. Consequently, approximately 3 million cases of intoxications due to OPs are reported each year, most of them being fatal for the patients. Despite recent progress, the chemical defense presents undeniable shortcomings and severe limitations. Thus, the aims and objectives of this multidisciplinary project is to develop innovative decontamination tools active under mild conditions and covering a broad spectrum of compounds. To reach this polyvalence level, our research hypothesis relies on the implementation of a unique innovative biomimetic approach consisting in the conception of enzyme mimic, such as functional Molecular Imprinted Polymers endowed with a programmed specific catalytic transformation.

Candidates profile:
The successful candidate (PhD in organic chemistry) should have a strong background in synthetic organic chemistry and supramolecular chemistry, be creative and highly motivated to join a multidisciplinary research team. Knowledges in practice of macromolecular chemistry and/or a background in separation and purification by HPLC would be considered as an asset. Chemist exhibiting a specific interest at the chemistry-biology interface would be preferred.