

Postdoctoral position available, starting in November 2018

A postdoctoral position in organic synthesis is available for **18 months** at the “Institut des Sciences Moléculaires de Marseille” (iSm2 – UMR CNRS 7313 – Équipe STERÉO) and will be funded by the “Agence Nationale pour la Recherche (ANR).” **Keys words: organic synthesis; heavy metal sensors; water pollution; surface grafting; fluorescent sensors.**

Smart-3D project: Contamination of aquatic environments by heavy metals is a major concern in the scientific community and for societal issues. Indeed, these pollutants are generally not biodegradable and can accumulate in the environment. Among these heavy metals, lead, cadmium and mercury have attracted most attention due to toxicity issues. Regulatory organisms have strictly defined the concentration limits of these three heavy metals in various types of waters, including drinking water and surface waters. Mobile and portable devices with high selectivity and sensitivity (quantification limits below $1 \mu\text{g L}^{-1}$ and low interferences from other cations) would therefore be a precious tool for on-site analysis of these heavy metals, enabling rapid evaluation of the contamination of water samples.

The objective of the proposed project is to develop an analytical device for lead, cadmium and mercury, designed as a potentially portable and suitable tool for on-site application. Selective and specific detection of these metals will be performed by specially-designed fluorescent sensors (fluoroionophores) bearing specific electron donating groups (oxygen, sulfur, nitrogen) to provide **high affinity for heavy metals**. Groups based on (thio)urea, bis(2-pyridylmethyl)amine or pyridinophane cycle will be synthesized and linked to a fluorophore to provide the desired sensors. Sensors will also include an additional functional group for future grafting on a polymeric surface for solid phase sensing. Design and synthesis of three selective fluoroionophores (one for each targeted metal) based on the same fluorogenic part (Rhodamine) will be the main challenge of this part of the project. Synthesized sensors will then be tested at the Laboratory of Environmental Chemistry (LCE- UMR CNRS 7376- Team TRAME) for their analytical response with metal cations and for potential interferences. These tests will be conducted in liquid phase and in solid phase after grafting of the sensors on a model polymer bearing suitable functional group. This postdoctoral position will be dedicated to the synthesis of the fluoroionophores and their tests in liquid and solid phase.

Postdoctoral profile: The position requires a solid training in organic synthesis. The skills required for this research are the classical skills of an organic chemist. We will look for a rigorous, motivated and enthusiastic candidate with excellent knowledge in synthetic organic chemistry research. An experience in the synthesis of heavy metal sensors, in surface-grafting chemistry and/or in polymer chemistry would be a plus. The position will be entirely dedicated to this project and hence be 100% funded by the ANR.

Candidates should send: • a CV with a list of publications and communications • a motivation letter • the contact of at least two referees. **Gross salary:** around 2400 Euros/month. Applications can be sent to fabien.robert-peillard@univ-amu.fr and damien.bonne@univ-amu.fr