



Postdoc position in bioorganic / bioinorganic chemistry available in Grenoble, France

Fluorescent probes for the detection and quantification of traces of copper(II) in biological fluids

Copper (Cu) is an essential trace element for most living organisms. The vast majority of copper is strongly bound by proteins and only a small proportion is labile, i.e. bound to biomolecules but able to be exchanged or transferred fairly quickly. This population of exchangeable copper is mainly extracellular, where copper is mainly present in its oxidized form Cu(II). The aim of the project is to develop a luminescent probe for ratiometric Cu(II), capable of specifically measuring labile/exchangeable Cu(II) concentrations in biological systems ranging from cell culture media to blood plasma. Such a Cu(II) sensor would not only be very useful as a tool for understanding Cu metabolism, but could also have direct applications for diagnosing diseases resulting in an increase in the exchangeable Cu population, such as Wilson's or Alzheimer's disease.

Our approach is to use peptide ligands for copper, combined with luminescent lanthanide complexes, for their luminescence properties, which are of great interest for detection in biological environments. FRET systems combining lanthanide complexes and organic fluorophores could also be developed.

The postdoc recruited will aim to (i) synthesize polyaminocarboxylate ligands that selectively bind lanthanides and are equipped with an antenna that sensitizes lanthanide luminescence, (ii) synthesize recognition peptides, (iii) conjugate the lanthanide complexes to the peptides and (iv) characterize the complexes and study the response of the probes in the presence of Cu(II) and other competing metals.

The post-doc recruited will be responsible for the synthesis of macrocycles with push-pull antennae for the complexation of lanthanides, the synthesis of conjugates and luminescence spectroscopic studies to characterize them in solution.

We are looking for a PhD in chemistry with solid experience in organic and/or peptide synthesis and a strong interest in fluorescence. The candidate should be proficient in chromatography techniques for the purification of organic molecules and peptides, as well as in the characterization of molecules by NMR. Knowledge of fluorescence would be appreciated.

The postdoc recruited will join the 'Metallopeptides' group of the Chemistry and Biology Laboratory (joint CEA-Grenoble, Univ. Grenoble Alpes and CNRS research unit). This postdoctorate is part of the CuTrace project, in collaboration with the teams of Peter Faller (Univ. Strasbourg, France), Gilles Ulrich (Univ. Strasbourg, France) and Nouzha Djebrani Oussedik (Hôpital Lariboisière AP-HP, Paris).

Duration: 15-18 months depending on experience.

Gross salary: 2 991,58€ to 4 166,70€ gross per month depending on experience

Contact: email to olivier.seneque@cea.fr

Application: <https://emploi.cnrs.fr/Offres/CDD/UMR5249-OLISEN-005/Default.aspx>