Postdoc Position at Laboratoire Léon-Brillouin

The Laboratoire Léon-Brillouin (LLB) is a French Research Infrastructure jointly supported by the "Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA_2)" and the "Centre National de la Recherche Scientifique (CNRS)" (http://www-llb.cea.fr). The LLB is rather unique among neutron centers worldwide since it was specified from the outset to operate both as a large-scale facility open to a user community, as well as a research institute in charge of developing its own research programs.

Neutrons are an invaluable technique to study a large variety of issues, including, for biological ones, protein folding/unfolding. The structure and the dynamics of proteins can be elucidated by small angle neutron scattering (SANS) and inelastic/quasielastic neutron scattering, such as neutron resonance spin echo (NRSE), due to the characteristics time- and length-scales probed by these techniques (from nanoseconds to few hundred microseconds and from fraction of nanometers up to several hundreds nanometers). In addition, neutrons are non-destructive and their large penetration depth makes them easily penetrate matter (contrary to electrons and x-rays).

The LLB is also strongly involved in European Programs (NMI3-II, http://nmi3.eu/) with the development of Working Packages (WP). Especially, the LLB is involved, in the framework of the WP20 entitled "Advanced Neutron Tools for Soft and Bio-Materials", in the development of high pressure cells for SANS and NRSE. So far, only few neutron scattering experiments have addressed the structure and the dynamics of biological materials involving pressure. The LLB has a high experience in this field. In particular, a high pressure device has been developped for SANS experiments, which is being applied in many projects involving protein folding/unfolding.

The Scientific Project

Our project is to study the effect of pressure on the structure (by SANS) and the dynamics (by NRSE) of myoglobin and apomyoglobin (myoglobin without its heme). For both proteins, structural changes may occur not only at "high" pressure (3-6 kbar), where proteins generally unfold completely, but also at "lower" pressure (1.5-2 kbar), where the input of water in the hydrophobic cavities present in the proteins may provide intermediate folding conformations so far undetected.

Requirements

The successful candidate will be part of "Soft Matter and Biology" scientific axis. The position will allow the successful candidate to take advantage of the large in-house capabilities in biology/biophysics research, including neutron spectrometers and support laboratories, and access to the large scientific area around the "Plateau de Saclay".

Qualifications

Candidates are expected to have a PhD or similar in biophysics, biology, physics, or chemistry. Experimental experience in protein folding/unfolding especially with pressure would be highly appreciated. Experience with structural radiation techniques (X-rays or neutron scattering) would be advantageous.

Duration & Location

The position is a one year employment by CEA in the framework of NMI3-II program. The successful candidate will be located at LLB, Saclay, France.

Start Date

The position is to be filled from October 2014.

Application & Contact

Please contact Dr. Sophie Combet (sophie.combet@cea.fr) or Dr. Annie Brûlet (annie.brulet@cea.fr).