

Post-doctoral Position - SEXTANTS

Experimental Division

Position opens in September 2014. Deadline for submission of application: June 25, 2014

Soleil is a particle accelerator that produces synchrotron radiation, extremely powerful light source for exploring inert or living matter. This multidisciplinary tool, indispensable in the fields of research and industrial applications, welcomes more than 3,000 users per year. Financed by two principal shareholders- the CNRS and the CEA-SOLEIL holds a status of "Public company". SOLEIL runs continuously 24 hours a day, 7 days a week, with uninterrupted periods of up to 7 weeks. SOLEIL staff is composed of about 500 employees, all categories combined (permanent staff, PhD students, post - doctoral students, apprentices).

1. Post-doctoral Position - (m/f) – Resonant Inelastic X-ray spectroscopy at SEXTANTS

SEXTANTS is a new beamline conceived for the investigation of electronic and magnetic properties of matter through elastic, inelastic and coherent scattering of soft X-ray photons, open to external users since March 2011. The full energy range, from 50 to 1700 eV, is covered by two APPLE-II undulators providing full polarization control, and by a fixed-deviation monochromator based on five plane gratings and one spherical mirror. The monochromator feeds two independent branches; one is dedicated to elastic (magnetic, coherent) X-ray scattering experiments, the other to resonant inelastic X-ray scattering (RIXS) experiments. This latter branch, characterized by an extremely small monochromatic beam (2x80 μm^2 FWHM) and equipped with the AERHA spectrometer, is devoted to high-resolution RIXS experiments over the 50-1000 eV energy range, with a resolving power up to 8000. The AERHA spectrometer, developed jointly by the "Laboratoire de Chimie-Physique Matière et Rayonnement" and SOLEIL, is based on an elliptical mirror, focusing on a 13.5 μm pixel LN-cooled CCD, and on two VLS gratings, used to cover the entire energy range. It is important to remark that the high brilliance/resolution together with the wide energy range accessible for RIXS experiments at SEXTANTS, extending from L- to M-edges of light transition metal compounds, and including oxygen and carbon K edges, makes this experimental setup not only suitable for study of the low-energy electronic and magnetic excitations in highly correlated materials (e.g., transition-metal oxides and rare-earth compounds), but also a unique place where to investigate organic compounds/molecules deposited on solids or in gaseous/liquid solutions.

Further information about this position can be obtained from:

Nicolas JAOUEN, principal beamline scientist: nicolas.jaouen@synchrotron-soleil.fr

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2. Mission

The investigation of gaseous and liquid samples with spectroscopy and scattering techniques is one of the most challenging as well as currently most rapidly evolving areas in the field of molecular dynamics. For this reason, in 2012, SOLEIL and MAX IV started a joint project in order to develop a gas/liquid cell for RIXS experiments and optimized for a very high-resolution spectrometer. The first prototype is actually under fabrication and the commissioning is planned to start by the end of 2014. The candidate will be responsible of the commissioning and optimization of the new gas/liquid cell for high-resolution RIXS experiments.

The candidate will join the research activity of the group concerning static and dynamic electronic/magnetic properties of matter, with a particular interest to the RIXS experiments in the gas/liquid phase. This activity will include the participation to in-house experiments, as well as the possibility to carry on personal research projects, through the redaction of proposals, the conduction of experiments, the data analysis and the valorisation of the results through the publication and/or presentation in international journals and/or conferences.

3. Qualifications & Experience

The candidate must hold a PhD or equivalent degree in areas such as: condensed matter physics, atomic and molecular physics, materials science, chemistry.

An experience in elastic and inelastic X-ray scattering techniques and/or in the use of synchrotron radiation sources in the soft X-ray regime will be strongly appreciated.

The candidate should be fluent in English (knowledge of French would be an advantage), or fluent in French with a good knowledge of English.

4. General conditions

The offer concerns a Post-doctoral contract for a two year-period. A wide range of valuable training programs, research and upgrading opportunities will be accessible. Moreover, the position benefits of a progressive employment conditions and a flexible work-life balance policy.

The contract could start from September 2014.

The place of work will be at Synchrotron SOLEIL, which is located in the Paris suburbs (Saint-Aubin).

Applications should include a motivation letter and Curriculum Vitae with the addresses of three references. Applications should be preferably registered directly on the:

<http://candidature.synchrotron-soleil.fr/YourApplication/Candidatures/> with the reference: **Post-Doc-SEXTANTS**

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