Within an ERC CoG project, CEA-Grenoble/IRIG is seeking to recruit a:

Post-Doctoral Fellow (f/m): Catalytic properties at the nanoscale probed by time-resolved Bragg coherent diffraction imaging

The Subject

The postdoctoral research project is part of a five-year ERC-funded project called CARINE (*Coherent diffrAction foR a Look Inside NanostructurEs towards atomic resolution: catalysis and interfaces* – https://carine-erc.eu) to develop and apply new coherent diffraction imaging (CDI) capabilities. The main objective of the project is to image nanostructures *in situ* during reaction and to reveal their structure evolution in time and at the nanoscale to probe bulk, surface and interface effects, as well as defects. Catalysts play a key role in approximatively 90% of industrial chemical processes. The development of heterogeneous catalysis with selectivity targeting the 100% is a constant challenge as well as understanding the durability and ageing of the catalyst itself. However, the catalytic process and the associated structural changes still remain poorly understood. Understanding how catalyst structure is affected by the adsorbed layer under reaction conditions is therefore of utmost importance to formulate catalyst structure-performance relations that guide the design of better catalysts.

The Function

The successful candidate will develop time-resolved Bragg coherent diffraction imaging to study *in situ* and *operando* the structural evolution of catalytic nanoparticles in various gaseous and liquid environments during reaction. He/she will participate in the set-up development and experiments, will perform the data treatment using the so-called phase retrieval algorithms. The work will be performed in close collaboration with the ID01 beamline of The European Synchrotron (ESRF), a world-leading x-ray facility, with a revolutionary new storage ring that increases the brilliance and coherence of x-rays by a factor of 100 compared to present-day light sources.

Profile Of The Applicant

The applicant should hold a PhD in physics, chemistry or material science or closely related science. Previous experience of synchrotron x-ray diffraction, time-resolved experiments as well as catalysis will be an advantage. The applicant should have very good skills in programming (Python). He/she should have good interpersonal, communication, organisational and presentational skills. The working language is English.

Contract Characteristics

This is an **18-month** contract located at Grenoble (ESRF) with the possibility of a 18-month extension.

Interested applicants should submit:
(1) 1 page cover letter stating the motivation, research experience and goals, and anticipated available date;
(2) curriculum vitae, and
(3) contact information for 3 references (reference letters are not required at this time)

to Marie-Ingrid Richard (mrichard@esrf.fr). **Application deadline: January 31, 2022**