

Position Offered: PREDOCTORAL RESEARCHER

Project: *Advanced digital tools and their application in the development of key technologies for a sustainable energy transition (DigiTES)*

Technological and scientific fields: Data analysis and integration, X-ray analytical techniques, batteries

Location: Bellaterra, Catalonia, Materials science institute of Barcelona <https://icmab.es/>

Research Group/PI: 1) Solid State Chemistry/Dino Tonti https://icmab.es/ssc_2 2) ALBA synchrotron <https://www.albasynchrotron.es/en/>. Laura Simonelli

PROJECT SUMMARY

Electrochemical processes are at the base of several applications in chemical and material synthesis, energy and environmental fields. Development of experiments at laboratory and in large facilities has allowed observation of processes in real time and under operation (i.e. operando), overcoming problems of reproducibility and providing finer detail on the mechanisms and transient species. Such experiments typically produce vast amounts of data that suppose a challenge for their organization, analysis and interpretation. We propose an initiative to streamline data processing from electrochemical operando experiments coupled with diffraction and spectroscopy analysis. The tools will visualize the parallel evolution of electrochemical parameters and material properties and evaluate the correlation degrees among a large set of descriptors of the physical phenomena. The successful candidate will contribute to the development and validation of these tools by setting up battery operando experiments based on different analytical techniques, and applying the received training on data science by writing own modules for the efficient analysis of large amounts of data.

PROFESSIONAL PROFILE

Minimum requirements:

- Master's degree in Physics, Chemistry, Materials Science or similar
- Proficiency in oral and written English

Merits to be considered:

- Experience with electrochemical techniques, electrochemical energy storage, X-Ray analytical techniques, spectroscopic analysis methods
- Effective communication skills, team work, strong academic record

WHAT IS OFFERED

Strong training component, equivalent to 240 ECTS, including hand-on training on batteries, synchrotron x-ray techniques, IT techniques, and the award of a master's degree on data science, or similar degree. 9-month stays at ALBA synchrotron and other related research institutions

Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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