basque center for applied mathematics

EXCELENCIA SEVERO OCHOA

IC2025_06_02 BCAM International Call

Research Technician in Atomistic Simulations of Composite Electrolyte Materials.

f

Job Offer	
Topics:	**The Basque Center for Applied Mathematics is hiring a Research Technician for an initial duration of three months. The position This project has been funded by the Provincial Council of Bizkaia as part of the Technology Transfer 2024 Programme.** The starting date is currently set at September 2025, and the initial duration of the contract will be for three months.The fellow will enter BCAM under the supervision of: Dr. Mauricio Rincón Bonilla, Dr. Henry Andrés Cortés and Dr. Ikerbasque research professor Elena Akhmatskaya. Research Topic: Sodium-ion (Na-ion) batteries have emerged as a promising alternative to lithium-ion systems, particularly due to the abundance and low cost of sodium. A critical component in their performance lies in the solid electrolyte interphase (SEI), formed on hard carbon anodes during initial charge-discharge cycles. If you are a passionate about Mathematical Desing, Modelling and Simulations, and eager to embark on a research career at BCAM, this opportunity is for you. Apply now and become part of our dedicated team at BCAM. This SEI layer acts as a protective barrier, preventing continuous electrolyte decomposition while allowing Na^+ ions to diffuse through. However, unlike lithium, sodium tends to form a more resistive and less stable SEI on hard carbon, which can impact capacity retention and cycling stability. Researchers are actively exploring electrolyte formulations and surface engineering techniques to tailor SEI properties and enhance the long-term efficiency of Na-ion cells. Recently, our collaborators at the University of Sao Paulo have developed fibrillar hard carbon anodes with high-capacity retention in NaMnNiO Na-ion batteries. The proposed anode performs significantly better than the traditional slurry-based hard carbons, opening an avenue for the deployment of cheap, critical raw materials – free sodium storage devices. However, the mechanism behind the enhanced performance is unclear. By using an

IC2025_06_02 BCAM International Call

	atomistically-informed continuous modelling approach of SEI formation and evolution, the technician will contribute to answering this research question. The proposed model will be, to the best of our knowledge, the first of its kind for the dynamics SEI growth in sodium batteries. If you are a young graduate passionate about Computational Physics, Chemistry, Applied Mathematics, Computer Science, or related fields, and eager to embark on a research career at BCAM, this opportunity is for you. Apply now and become part of our dedicated team at BCAM.
PI in charge:	Mauricio Rincón Bonilla Henry Andrés Cortés Elena Akhmatskaya
Salary and conditions:	**The gross annual salary of the Fellowship will be 20.258€- 30.744€** It will then be on your own responsibility to make your yearly income declaration at the Bizkaia Treasury Agency. Additionally, we offer a moving allowance up to 1.000€. Should the researcher have a family at the time of recruitment: • 1.000€ gross in a single payment will be offered (you must be married-official register or with children and the certificate to prove it must be sent). • 600€ gross per year/per child (up to 2 children) will be offered (the certificate to prove it must be sent). *Free access to the Public Health System in Spain is provided to all employees.*
Contract and offer:	**3 months**
Deadline:	**02/07/2025 14:00 CET**
How to apply:	Applications must be submitted on-line at: https://joboffers.bcamath.org/

basque center for applied mathematics

EXCELENCIA SEVERO OCHOA

IC2025_06_02 BCAM International Call

Scientific Profile Requested	
Requirements:	• Promising young researchers. • Applicants must have completed a Master's degree in Computational Physics, Chemistry, Applied Mathematics, Computer Science, Engineering or related fields.
Skills and track-record:	• Good interpersonal skills. • Demonstrated ability to work independently and as part of a collaborative research team. • Ability to present and publish research outcomes in spoken (talks) and written (papers) form. • Ability to effectively communicate and present research ideas to researchers and stakeholders with different backgrounds. • Fluency in spoken and written English
Scientific Profile:	The preferred candidate will have: • Background in mathematical modelling using ordinary and partial differential equations. • Working knowledge in any of the following computational packages: Python, MATLAB, Julia, Fortran, C++. • Basic background in atomistic simulation methods, packages (GROMACS and/or LAMMPS) and visualization software (VMD, Ovito). • Working knowledge of Linux and job schedulers (e.g. Slurm, Torque, etc). • Basic knowledge in materials science and electrochemistry (desirable).

Application and Selection Process	
Formal Requirements:	The selected candidate must have applied before the application deadline online at the webpage: https://joboffers.bcamath.org/ The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile. Additional documents could be requested during the evaluation process so as to check this fulfilment.

basque center for applied mathematics

EXCELENCIA SEVERO OCHOA

IC2025_06_02 BCAM International Call

Application:	Required documents (see Topics section above for instructions): • CV • Letter of interest • 2 recommendation letters (desirable) • Statement of past and proposed future research
Evaluation:	Based on the provided application documents of each candidate, the evaluation committee will evaluate qualitatively: the adaption of the previous training and career to the profile offered, the recommendation letters, the main results achieved (papers, proceedings, etc.), the statement of past and proposed future research and other merits; taking in account the alignment of these items to the topic offered.

Incorporation:	***As soon as possible.***

Bizkaia
foru aldundia
diputación foral