ELECTROCHEMICAL CELL MODELING RESEARCHER

Company Description

CIC energiGUNE is a research center specialized in energy, electrochemical storage (batteries and supercapacitors), thermal energy solutions and hydrogen, a member of the Basque Research and Technology Alliance- BRTA, and, a strategic initiative of the Basque Government. CIC energiGUNE was created in 2011 to generate excellent knowledge and at the same time useful for the Basque business network, being a reference in knowledge transfer. CIC energiGUNE has a dynamic research team of more than 100 researchers and is extremely well equipped with a wide range of up-to-date facilities that are fully available for all its researchers. Also, the European Commission has recently awarded CIC energiGUNE with the ´HR Excellence in Research´ which reflects its commitment to achieving fair and transparent recruitment and appraisal procedures and certifies the existence of a stimulating and favorable work environment for researchers in the institution. For more details on CIC energiGUNE's Research activities please visit our website at: http://www.cicenergigune.com

Information

Deadline: 2021-09-30
Category: Business
Province: Araba / Álava
Country: Basque Country
City: VITORIA-GASTEIZ

Company

CIC energiGUNE

Main functions, requisites & benefits

Main functions

CIC energiGUNE is seeking an experienced cell modeling researcher to develop and validate electrochemical models to simulate cell performance under a wide range of operating conditions and aging mechanisms. Job duties: To be a key member of a cross functional team to optimize battery performance over the lifetime of the cell. Mathematical modeling of the electrochemical behavior of electrochemical cells using PDEs or systems of ODEs. To translate aging mechanisms into mathematical representations that can be accommodated by existing models. To identify and evaluate new technology concepts through calculations and proposed proof-of-concept experiments. To Work with cell and battery experimental groups to verify accuracy of mathematical models and performance simulation of new cell designs. Also interpret and quantify degradation modes of various battery chemistries and determine their impact on performance. Eventually work with battery pack engineers to generate reduced-order models that can be used as a basis for advanced BMS designs. To take a leadership role in various research activities, such as writing research proposals, project execution/reporting/management, writing high quality scientific research papers, and presenting research results at scientific conferences. The candidates are also expected to help mentor undergraduate and graduate students. To act as technical contact point for electrochemical characterization and mathematical modeling software, techniques and application. To be comfortable with project management and a diverse collaboration environment with multidisciplinary teams across Europe.

Requisites

Basic Qualification and Requirements: PhD from a top university in Materials Science, Physics, Chemistry, Chemical Engineering, or a related field. Industry experience is a plus. Strong theoretical foundation in electrochemical kinetics, thermodynamics, and transport. Three years of experience on physics-based electrochemical modelling, with emphasis on lithium-ion batteries, solid-state batteries, or supercapacitors. Highly motivated candidates with strong, hands-on battery research experience supported by a record of publications, good English communication skills (oral and written), and teamwork spirit. Strong aptitude in mathematical modeling of linear and nonlinear dynamical systems and distributed parameter systems, with proven competency in numerical solutions of PDEs and creating multi-physics cell models. Ability to clearly support and justify technical decisions based on data and results. Proficiency for quickly learning new skills or field of study. Desirable Requirements: Experience with software development and databases; especially fluency in Python. Experience and record of innovation in new use cases for electrochemical modelling in industrial applications. Experience in one or more of the following: machine learning for battery research; AI hardware; and electrochemical property prediction from ab-initio data. Familiarity with current state-of-the-art production processes applicable to lithium rechargeable cells.

Benefits

A 3 year contract and attractive professional development opportunities. Access to a complete set of existing laboratory infrastructure