



PhD Fellowship for Supercapacitors (Hybrid Supercapacitors) Research Line through Basque Government Grant

CIC energiGUNE is looking for a highly motivated candidate with a university degree on Chemistry, or Materials science-Engineering to apply for a Basque Government PhD Grant. [Check eligibility section.](#)

The offer is aimed at students currently completing or who have already completed a master degree in related subjects: materials science, physics, chemistry, engineering, etc.

Candidates must show initiative, independent thinking as well as capability to work in collaborative environments. He/she will be part of a multidisciplinary international research team. Good English level is highly recommended.

Eligibility

The position is subject to obtaining a Basque Government PhD Grant:

<http://www.hezkuntza.ejgv.euskadi.eus/>

In order to be eligible the candidate must:

- Be **resident** in the Basque Country prior to 31st December 2015.
- Be **fluent** in Spanish or Basque language (for the interview process)
- **Grade** obtained in **2012 or after**.
- **Grade records (over 10) higher than: 7.5 in Engineering; .8.0 in Chemistry; 9.0 in Physics.**

Note that those candidates not fulfilling all of the above criteria will be automatically discarded.

PhD project Description

Research Line: Supercapacitors, Hybrid Supercapacitors (EES)

Title: Development of novel hybrid electrochemical energy storage systems: Li-ion and Na-ion capacitors

Supervisor: *Dr. Jon Ajuria and Dr. Eider Goikolea*

The research project will be focused on the design of novel Li- and/or Na-ion hybrid capacitors combining a battery type electrode with a conventional electric double layer capacitor type electrode. The prospect student will develop skills in the synthesis and physicochemical and electrochemical characterization of materials as well as in the electrochemical cell design.

The interest in expanding renewable energy sources as well as the increased use of wireless technologies has stimulated the search for efficient and high performance energy storage



devices such as Li- or Na-ion batteries and electrochemical capacitors. Batteries commonly store a large amount of energy ($\sim 200 \text{ Wh kg}^{-1}$) but are limited by their low power density ($< 1 \text{ kW kg}^{-1}$) and poor cyclability, whereas the picture changes completely in the case of electrochemical capacitors and they are able to prove high power densities (10 kW kg^{-1}) and a good cycle life at the expenses of lower energy densities (10 Wh kg^{-1}). The combination of electrochemical capacitors and batteries in the same system has emerged as a promising way to circumvent the weak features of each technology and benefit from the fast charging rate of electrochemical capacitors and the high energy density of batteries. One of the most common approaches comprises the use of an electrochemical capacitor type electrode and a battery type electrode in the same cell, which is formally known as a hybrid supercapacitor.

How to apply

To apply for a CIC energiGUNE grant please enter your **CV** and **degree certificate record** through our website <http://www.cicenergigune.com/en/trabajar/>

The selection process ends once a candidate is selected.

CIC Energigune is committed to affirmative action, equal opportunity and the diversity of its workforce.