



**Postdoctoral Position:** characterization of fuel cell stacks for automotive application.

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<b>Deadline for application</b>	21.07.2017
<b>Duration</b>	1 year
<b>Hosting Laboratory</b>	FEMTO-ST, UMR CNRS 6174, Energy Department FCLAB, FR CNRS 3539, Belfort (France)
<b>Starting date</b>	September 2017
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<b>Documents</b>	Curriculum Vitae (mandatory) Motivation letter (mandatory) Recommandation letter (recommended)

## Presentation

The **Labex ACTION** is a laboratory of excellence dedicated to Smart systems integrated into physical structures. It aims at establishing a center of excellence in the field of “Smart systems embedded into matter” for which the up-coming technological challenges need a multiscale approach, from matter to object. With a global budget of about 6 M€/year, the Labex ACTION integrates about 200 academic staff & researchers coming from 3 recognized laboratories: FEMTO-ST (Besançon, 650 pers.), ICB (Dijon, 280 pers.) and LNIO (Troyes, 60 pers.).

The research activities of the Labex ACTION rely on 5 scientific workpackages & 5 demonstrators, aiming to study and design of programmable materials, metacomposites structures and to develop new control architectures of smart structures and systems, ensuring integrated and distributed functions of data processing, high complexity calculations and health-monitoring.

All Labex ACTION’ and **FEMTO-ST’** activities linked to the Hydrogen energy in general and to the fuel cell systems in particular are achieved within the **FCLAB Research federation**. Beside all the research teams working on Fuel cell systems in Franche-Comté region, the FCLAB gathers two research laboratories of the IFFSTAR (LTN and SATIE), as well as the AMPERE Laboratory in Lyon.

The Labex ACTION is currently looking for a:

## A Postdoctoral Researcher (f/m)

In order to further develop competencies in the field of advanced characterization of fuel cell stacks for automotive application.

A lot of efforts have been employed lately by different stakeholders to boost Fuel Cell (FC) systems deployment, and promising premises are already there: early 2015, Toyota and Hyundai launched a series production of the first FC vehicles to be commercialized at large scale (even if its

commercialization is limited to the countries where H<sub>2</sub> infrastructure is deemed sufficient). In Europe, Daimler announces its intention for commercialization in 2017 while Audi and BMW are aiming at introducing FCEV from 2020 onwards boosting therefore the mass production and H<sub>2</sub> market activation.

From a technological point of view improving efficiency and increasing durability of fuel cell systems are the conditions sine qua non to accelerate the FCEV deployment. Both aspects will lead to lower operation costs. These conditions are not achieved unless advanced characterization techniques of FC to improve system control are implemented. This postdoctoral research aims at developing advanced characterization methods for FC stacks and systems dedicated to automotive applications.

The candidate will work within the FCLAB research federation in the frame of the ACTIF project that is a part of a French-German initiative for research collaboration on fuel cells and hydrogen for automotive application. French part is strongly supported by the LABEX ACTION.

### **The assigned tasks include:**

- Improving the comprehension of fault mechanisms and ageing due to the automotive usages.
- Understanding potentials for improving efficiency on a system level and increasing stack durability by developing advanced characterization methods for FC stacks dedicated to automotive applications (+ improvement of the most promising existing ones).
- Implementing advanced characterization methods in stack monitoring system for system control (on-board, at lower cost).
- Assessment of durability of cells/stack for different automotive operation profiles and ASTs (accelerated Stress Tests); updating ASTs.
- Recommendation of optimal operation modes and mitigation techniques for fault and ageing for industrials' needs.
- Regular reporting and communication of the results.

### **The required qualifications include:**

The postdoctoral applicant should:

- hold a PhD degree and have competencies in one or several of the following topics: electrical engineering, electrochemistry, automatic control, computer sciences, Applied mathematics, data mining, artificial intelligence.
- Have good written and oral communication skills in English (German communication skills would be highly appreciated).

The duration of the position is 1 year, starting in September 2017. Please forward your application until **21.07.2017** including all relevant information (curriculum vitae, motivation letter, testimonials etc.) to: [nadia.steiner@univ-fcomte.fr](mailto:nadia.steiner@univ-fcomte.fr).

Further information:

<http://www.labex-action.fr>

<http://www.fclab.fr>

<http://www.femto-st.fr>