

## Job Offer Post-doctoral Position in Paris (Sorbonne University)

### Title: Design of Li-ion Battery Separators for Cell Monitoring

#### Missions

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The post-doctoral candidate will be responsible for the design and development of intelligent separators using the electrospinning process to improve the quality, safety, and lifespan of Li-ion batteries. He or she will integrate functions to the separator for monitoring the state of health of the battery and for repairing it without disrupting the battery's performance. The candidate will implement characterization techniques for separator characterization (XPS, IR, Scanning Electron Microscopy, Raman Spectroscopy, electrochemical impedance). The separator's performance will be tested in an NMC/C type Li-ion battery. The post-doctoral candidate will closely collaborate with a doctoral student developing separators based on bio-source polymers. Additionally, they will benefit from an established collaboration between LCMCP, IPREM, and SyMMES to characterize the materials.

#### Activities

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Design an intelligent separator to monitor and repair Li-ion batteries.  
Provide support to the HEAL B and B project within the PEPR Battery framework, maintaining communication and coordination between LCMCP, SyMMES, IPREM, and LPPI.  
Contribute to the writing of reports and publications.

#### Skills

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Knowledge of hybrid chemistry (sol-gel and/or polymer) and/or Li-ion battery electrochemistry.  
Team spirit with the ability to collaborate effectively.  
Ability to synthesize reports and publications.

#### Work Context

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LCMCP (<https://lcmcp.upmc.fr/site>) is a collaborative research unit involving CNRS, Sorbonne University, with 40 researchers and teaching researchers. LCMCP's research interests include the development of functional inorganic or organic-inorganic hybrid materials through soft chemistry methods, and the evaluation of their physical-chemical properties at different scales. This post-doctoral position will be based within the Reactive Materials for Electrochemical Devices team, under the supervision of Prof. Christel Laberty-Robert. Li-ion batteries including high potential electrodes offer the advantage of providing high energy densities cells for electric vehicle applications. Parasitic reactions have been identified, leading for example to the dissolution of transition metals, causing destabilization of the SEI and performance modifications over time. To address these challenges, we aim to include a monitoring and healing function in the battery via the separator. Healing mechanisms could be autonomous or thermally controlled via an electrode deposited or encapsulated in the separator.

The position falls within a sector related to the protection of scientific and technical potential (PPST) and therefore requires, in accordance with regulations, approval for your arrival from the competent authority.

#### Application Conditions

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The workplace is Laboratory Chemistry of Condensed Matter in Paris (Fifth Quarter downtown Paris). It is a full-time position for 2 year with growth salary of ~ **2,900 euros** per month.

Interested candidates should submit a cover letter, a CV, and the names of 2 references who can be contacted to Prof. Christel Laberty-Robert, [christel.laberty@sorbonne-universite.fr](mailto:christel.laberty@sorbonne-universite.fr).