



ERC Funded Post-Doctoral position:

### **ALD of Ruthenium Oxide for Micro-Supercapacitor Application**

**Project description:** The integration of miniaturized supercapacitors (also called micro-supercapacitors) on circuit chips has been the subject of intense research on the account of their excellent charge-discharge rate and long operating life time<sup>[i]</sup>. However, a significant improvement of their areal energy density is needed for more challenging applications. An attractive approach to enhance the energy per surface area is to increase the areal capacitance of electrodes by relying on a conformal thin-film of hydrous ruthenium oxide ( $\text{RuO}_x \cdot n\text{H}_2\text{O}$ , the active material) deposited by atomic layer deposition (ALD), followed by an electrochemical oxidation process, onto a highly porous current collector prepared via a dynamic template built with hydrogen bubbles<sup>[ii,iii]</sup>.

Within a framework of an ERC project dealing with the development of 3D Micro-Supercapacitors, a postdoctoral position is available at LAAS-CNRS (Toulouse, France), starting April 15, 2021. The candidate will explore the ALD of different stoichiometry of  $\text{RuO}_x$  and hydrated  $\text{RuO}_x$  with oxygen or ozone co-reactants and perform physicochemical and electrochemical characterizations of the deposited films on different substrates.

**Applicant's profile:** We are looking for a candidate with strong background on ALD and electrochemistry (both compulsory). An experience in micro-fabrication in clean room would be appreciated but not required. The candidate should be fluent in English; written and spoken and be highly autonomous and able to work for a multidisciplinary project involving researchers and scholars from very different fields.

If you are interested, please apply online at: <https://bit.ly/3ocbINb>

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<sup>i</sup> N.A. Kyeremateng, T. Brousse, D. Pech, **Nature Nanotechnology**, vol. 12, p. 7 (2017).

<sup>ii</sup> A. Ferris, S. Garbarino, D. Guay, D. Pech, **Advanced Materials**, vol. 27, p. 6625 (2015).

<sup>iii</sup> S.G. Patnaik, J.S. Seenath, D. Bourrier, S. Prabhudev, D. Guay, D. Pech, **ACS Energy Letters**, vol. 6, p. 131 (2021).