



Mahdi MOGHADDAM

From Finland to France



Project: **Scanning Electrochemical Microscopy (SECM) application in solid-boosted flow batteries**

Research topic: **Physical chemistry**

Finnish Institution: **University of Turku**

French Institution: **University of Paris**

Dates of mobility: **01/05/2022 to 15/05/2022**

Program: **Maupertuis Programme**



PRESENTATION

[Mahdi Moghaddam](#) is currently at final stages of his PhD studies at the [University of Turku](#), at the research group of Battery Materials and Technologies under the supervision of [Prof. Pekka Peljo](#). He obtained his dual-degree Master's in materials engineering from [Arts et Métiers ParisTech](#) in France and the [University of Tehran](#) in Iran. His current research is on the application of Scanning Electrochemical Microscopy (SECM) on solid-boosted flow batteries. It aims to unravel the kinetics of electron transfer reactions in this novel type of redox-mediated flow batteries to enhance the energy density of conventional redox flow batteries.

ACTIVITIES IN FRANCE

During his stay, Mahdi Moghaddam discussed with the hosting researcher [Dr. Frederic Kanoufi](#) and his doctoral candidate [Louis Godefroy](#). He learned more about chemical and electrochemical processes at the single nano/micro particle level. Furthermore, he had the opportunity to run combined SECM and optical microscopy experiments on his materials, Copper Hexacyanoferrate (CuHCF) as a solid booster material and N,N,N-2,2,6,6-heptamethylpiperidinyloxy-4-ammonium chloride (TEMPTMA) as a dissolved redox mediator.

In addition, during his stay in [ITODYS](#) lab he had the chance to fabricate some Ultra Micro Electrodes (UMEs) with both thermal and laser pipette pullers available there and brought some fresh electrodes with him to Turku.

Currently the two research groups are continuing the collaboration and members from both groups are having more research visits in Turku and Paris.