Master Thesis jointly supervised by UMICORE and LRCS	
Topic Title	***Water-mediated synthesis and characterization of air stable Superionic Halide Solid Electrolytes for All-Solid-State batteries***
Principal Advisor	VIALLET, Virginie, virginie.viallet@u-picardie.fr, +33 3 22 82 53 33
Co-advisor	CABELGUEN, Pierre-Etienne, Pierre-Etienne.Cabelguen@eu.umicore.com
Collaborations	
Funding Source, Name of project	UMICORE and UPJV Amiens
Web Site of Advisor (if applicable)	https://www.lrcs.u-picardie.fr/ ; http://www.umicore.com
Date of publication of the offer	November 15th, 2019
Deadline for application	December 20th, 2019
Date of start of the Project	After January 2020 (6 months)
Description of the Topic	All-solid-state lithium batteries (ASSLBs) using solid-state electrolytes (SSEs) are considered as promising next-generation energy-storage systems with improved safety through the elimination of the flammable liquid electrolyte in convention lithium-ion batteries (LIBs). Despite recent progresses made in the development of oxide-based and sulfide-based SSEs with high ionic conductivity of over 10^{-3} Scm^{-1}, several serious obstacles are still hindering their practical applications, especially the manufacturing complexity and sensitivity to air and moisture. The aim of this Master study will consist in optimizing a water-mediated synthesis route and characterizing air stable Superionic Halide Solide Electrolytes.
Techniques to be used	✓ X-ray diffraction ✓ Thermal analysis ✓ Scanning Electron Microscopy ✓ Impedance spectroscopy ✓ Galvanostatic electrochemical cycling
Skills of the Applicant	Background in materials science, chemistry or physical-chemistry Open-minded, dynamic and showing a strong motivation
Contact (s)	virginie.viallet@u-picardie.fr
List of documents to provide	CV + motivation letter + list of references