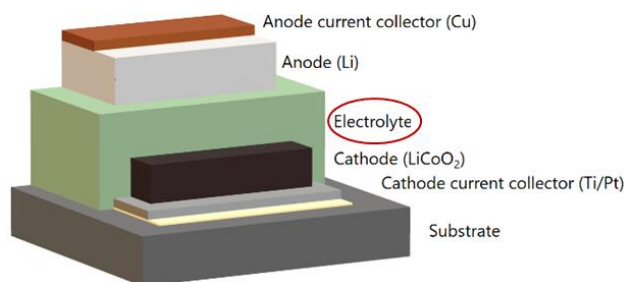


## Master's thesis:

# Magnetron sputtering of solid-state electrolyte separator from for solid-state battery

at the Laboratory for Thin Films and Photovoltaics, Empa (Dübendorf, Switzerland)

The Laboratory for Thin Films and Photovoltaics is internationally known for innovative research in the field of thin films for photovoltaic and battery applications. Solid-state thin-film batteries are one of the research topics within our group, utilizing the advantages of thin-film manufacturing processes for solid-state batteries. The solid-state electrolyte is one of the key compounds for the next generation of batteries and is currently being deposited, in our lab, by magnetron sputtering using commercial material targets.



This project aims to investigate homemade compacted powder as source material to reach target compositions that are not commercially available and to study compounds that have never been reported to date using such a technique. You will learn how to fabricate thin films using advanced techniques like sputtering and thermal evaporation. Using these methods, you will deposit solid-state electrolyte layers, with the possibility of fabricating a full rechargeable solid-state battery, as proof of concept. You will further learn the characterisation techniques required to study morphology and electronic and ionic properties of these materials.

This project requires multidisciplinary knowledge. Therefore you are welcome to apply if you have a background in physics, chemistry, materials science, or electrical engineering. Feel free to contact us for further information.

**Duration:** 6 to 12 months

**Starting date:** Anytime

**Contact:** Nicolas Osenciat ([nicolas.osenciat@empa.ch](mailto:nicolas.osenciat@empa.ch))

Dr. Yaroslav Romanyuk ([yaroslav.romanyuk@empa.ch](mailto:yaroslav.romanyuk@empa.ch))

**Website:** <https://www.empa.ch/web/s207/thin-film-batteries>