3D MICROSTRUCTURE OF BATTERY ELECTRODES ANALYZED BY FIB-SEM AND *IN OPERANDO* X-RAY TOMOGRAPHY

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Batterie electrodes, and in particular Lithium based batteries, have a complex microstructure. They are composed of different solid functional constituents (C, Si, LFC, conductive binders, ...etc) irrigated by a network of interconnected pores. During operation, the pores are filled with liquid electrolyte allowing ionic reactions and transport.

The microstructure of these complex structures should be analyzed at different important length scales. The morphology of the initial pristine electrodes is first a key information allowing to understand and then optimize the electrode behavior. The changes in this microstructure is then another important indicator of the degradation of the performance of the battery in service.

This microstructure and its evolution being complex in nature and the connectivity of the phases being of utmost importance for electrical transport, 3D imaging techniques could be interesting tools to use.

For all these reasons, analyzing the microstructure of the electrodes has been carried out in the present study using non destructive X Ray Tomography (XRT) at different scales and *in operando*. Because the resolution in XRT is sometimes not good enough for the smallest scales in these electrodes, FIB-SEM destructive tomography has also been used to analyze the microstruture and its evolution.