Analysis of electronic and ionic wiring limitations to power performance of composite electrodes by dielectric spectroscopy and tomography

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A set of advanced techniques such as the broad band dielectric spectroscopy, X-Ray and FIB-SEM computed tomography, were used to study the multi-scale architecture and electrical properties of NMC- and LFP-based composite electrodes of surface capacities varying from 1.3 to 2.8 mAh cm^{-2} for lithium batteries.

Moreover, the discharge rate capability of these electrodes was also measured. The study as a function of the temperature allowed to identify which mechanism is dominating, charge transfer or diffusion, depending on the electrode composition, porosity, loading, and discharge rate.

This poster will describe which factor(s) (material properties, engineering parameters) mainly influence the rate discharging behavior of composite electrodes for lithium batteries.