

## In operando ATR-FTIR analysis of silicon anodes for Li-ion batteries

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Attenuated Total Reflection Fourier Transform InfraRed spectroscopy (ATR-FTIR) allows for studying thin-film electrodes in situ and in operando, in conditions close to those used in Li-ion batteries. This technique was used to obtain quantitative information on the surface and bulk phenomena involved during electrochemical cycling of amorphous silicon and amorphous lithiated silicon electrodes [1].

Main results include a precise knowledge of the evolution of the solid|electrolyte interphase (SEI) composition and thickness, of the irreversible lithiation process and of the hydrogen content of the films. From our study we can also infer the lithiation mechanism and its dependence on the film composition.

[1] D.A. Dalla Corte, G. Caillon, C. Jordy, J.-N. Chazalviel, M. Rosso, F. Ozanam, *Adv. Energy Mater.* (2016), 6, 1501768