OPTIMIZATION OF SILICON-BASED COMPOSITE ELECTRODES

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Over the last few years, silicon (Si) has attracted considerable attention since it has potentially about 10 times the gravimetric capacity of conventional graphite anodes (3578 mAh g^{-1} *vs.* 372 mAh g^{-1} for graphite) [1].

Several strategies have been undertaken to solve the large capacity fading observed during cycling of silicon electrodes. More than for any other active material for lithium battery, silicon has stressed the importance of carefully addressing the formulation and the engineering of the composite electrode [2].

In this communication we will report the study of the influence of a pre-treatment of the silicon powder and of the conductive additive choice on the cyclability of silicon based electrodes of various active mass loadings (between 1 and 3 mg cm^{-2}).

Furthermore, it has been discovered that storage for a few days in humid air before cell assembling of Si-carboxymethyl cellulose (CMC) composite electrode prepared with a slurry buffered at pH 3 has a major positive impact on its cycle life and coulombic efficiency [3].

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