

# Silicon Anode Modified by Grafting of Polyacrylic Acid for Li-Ion Batteries.

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A silicon composite anode was prepared from silicon modified by covalent attachment of polyacrylic acid [1-3]. More specifically, the Si nanopowder was modified by a two-step procedure by a binder-like organic molecular assembly (1-(bromoethyl) benzene and polyacrylic acid) grafted on the surface of hydrogenated silicon by the diazonium chemistry and surface initiated atom transfer radical polymerization, respectively. The modified silicon materials were characterized by transmission and scanning microscopy and energy dispersive X-ray spectroscopy, thermogravimetric analysis, Fourier transform infrared and X-ray diffraction spectroscopy. Composite electrodes were prepared with the modified silicon and various carbon additives such as acetylene black and electrochemically exfoliated graphene sheets. The effect of the formulation of the silicon-based electrodes on their mechanical and electrochemical properties was investigated.

## References:

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- [2] B.D. Assresahegn, D. Bélanger, ChemSusChem. 10 (2017) 4080-4089.
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