

## The Effect of Particle Size of Silicon Impregnated on a Carbon Foam on the Performance of Lithium Ion Battery Anode

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Although silicon has the highest known theoretical capacity for lithium ion battery anodes, its cycling accompanies large volume changes during lithiation/delithiation that leads to electrode pulverization and fast capacity fading. Silicon nanoparticles with different sizes, which were prepared by controlled chemical etching of pre-formed silicon nanoparticles, were impregnated in carbon foams (CFs) to enhance its cycling stability. The CFs were prepared with Resorcinol-Formaldehyde gel polymer in which 80nm silica particles were embedded as template. After carbonization of resorcinol-formaldehyde gel polymer, the silica template was removed by chemical etching process to obtain mesoporous CFs. The effect of silicon particle size and carbon foam matrix in Si/CFs composite on the performance of LIB anodes will be presented.