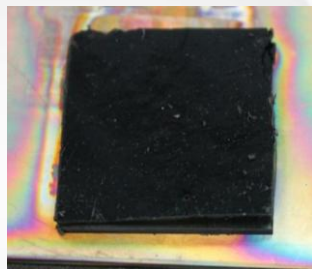


Investigation of a Novel Silicon/Carbon Nanotube 3-D Nanoarchitecture for Binder-Free, Stable Capacity, Lithium-Ion Battery Anodes

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The objectives of this work are to study novel lithium-ion battery anodes with a composite microstructure needed for the highest possible capacity. The anodes are being produced from silicon coated, vertically aligned carbon nanotube arrays which are densified into thin sheets. Results from the first year make progress towards confirming our hypothesis.



As-grown CNT array

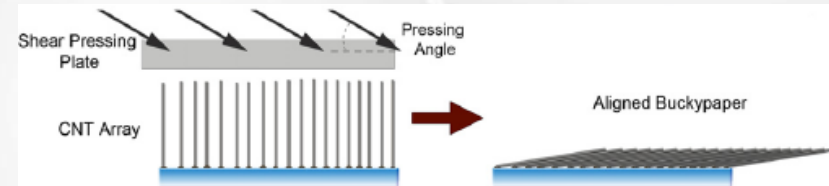
625°C
10 torr

SiH_4 (g)

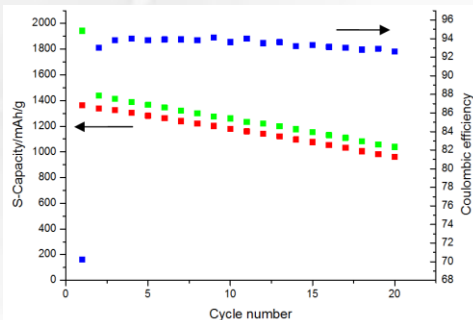


Si coated CNT array

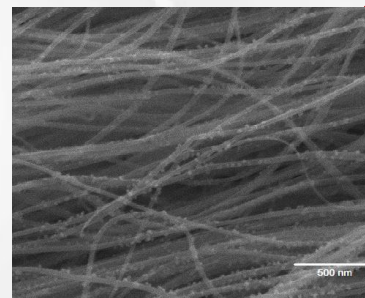
Shear pressed to densify coated array into thin film



Densified CNT/Si composite film



Specific capacity during initial cycling close to theoretical value



SEM image of uniformly coated CNTs