#49301-DNI10: Fabrication and Investigation of Porous Tin Oxide Anodes for Li-Ion Micro Batteries

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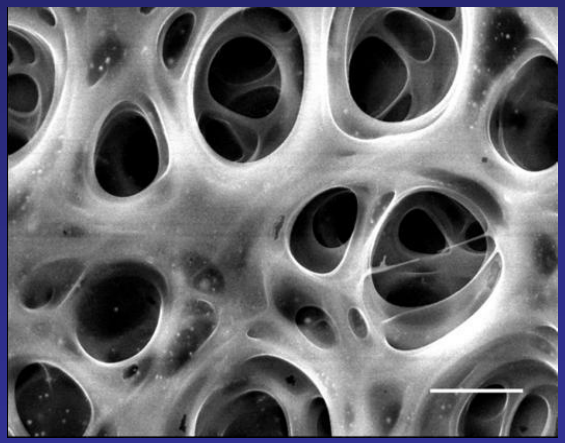
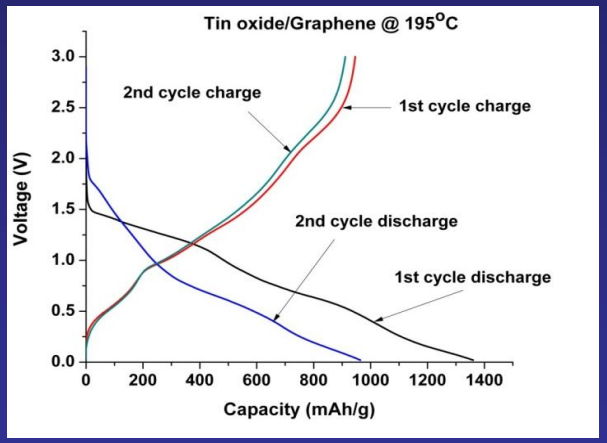
The requirement of higher energy capacity microbatteries demands the exploitation of new substitute materials with higher energy capacity than traditional graphite. SnO_2 has been considered as one of the most promising substitutes for the carbon anode in Li-ion batteries due to its high Li+ storage capacity. However, the practical application of SnO_2 as anode is restricted by poor cyclability and rate capability due to large volume change during cycling, which can cause disintegration and electrical disconnection from current collector.





In this project, we prepared and tested tin oxide and tin based compostie anode films with a variety of porous morphologies using Electrostatic Spray Deposition (ESD) technique. Material characterization and electrochemical analysis were conducted. This research has significantly enhanced our understanding of fundamental issues regarding intrinsic properties of porous tin oxide and tin based composite materials as high performance anodes for Li-ion batteries.