
Functionalized titania nanotubes as negative electrodes for Li-ion batteries

Thierry Djenizian

Mines Saint-Etienne, Center of Microelectronics in Provence, Flexible Electronics Department, 13541, Gardanne, France
Thierry.djenizian@emse.fr

With many advantages such as high surface area and improved charge transport, self-supported 3-D nanostructured metal oxides such as titania nanotubes (TNT) layers are promising electrode materials for Li-ion batteries.

This presentation will review the fabrication of Li-ion batteries using chemically modified TNTs as negative electrodes [1-9]. Effects of material selection and processing on the performance and reliability are presented as a means to develop conceptual guidelines to understand and improve microbattery designs. Different chemical modifications of nanotubes by ALD technique [10-13] and by the conformal electrodeposition of polymer electrolytes [14] for enhanced electrochemical performance will be presented. Fabrication of full 3D microcells showing high electrochemical performance will be shown and the development of the next generation of 3D flexible microbatteries will be also introduced.

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