International Conference on

Battery and Fuel Cell Technology

December 08-09, 2016 Dubai, UAE



Thierry Djenizian

Ecole Nationale des Mines de Saint-Etienne, France

Titania nanotubes for Li-ion microbatteries

L ithium-ion batteries (LIBs) are widely used to power portable devices, microelectronics, vehicles, etc. With many advantages L_{such} as high surface area and improved charge transport, self-supported 3-D nano-structured metal oxides such as Titania nanotubes (TiO₂nts) are promising electrode materials for LIBs and their impact is particularly significant when considering the miniaturization of energy storage systems and the development of 3D microbatteries. This talk will review the concept and fabrication of all-solid-state Li-ion microbatteries using TiO₂nts as negative electrode. Effects of material selection and processing on the performance and reliability are presented as a means to develop conceptual guidelines to understand and improve micro-battery designs. Fundamentals such as electrode reactions, lithium ion diffusion and the conformal electrode deposition mechanism of polymer electrolytes onto the nano-structured electrodes will be presented. The fabrication of a full 3D microbatteries will be discussed.

Biography

Thierry Djenizian is the Head of the Flexible Electronics Department at Ecole des Mines de Saint-Etienne. In 2002, he received his PhD degree in Materials Chemistry from the Swiss Federal Institute of Technology in Lausanne and the Friedrich Alexander University of Erlangen-Nuremberg. His research activities are mainly focused on the nano-structuring of materials for applications in energy storage and conversion at the micrometer scale (microbatteries). He is the author of over 100 publications in international journals and 5 book chapters. He is the Conference Chair of Porous Semiconductors Science and Technology international conferences.

thierry.djenizian@emse.fr

Notes: