World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:16, No:08, 2022

# Effect of Thermal Annealing Used in the Hydrothermal Synthesis of Titanium Dioxide on Its Electrochemical Properties As Li-Ion Electrode

**Authors :** Gabouze Nourredine, Saloua Merazga

**Abstract :** Due to their exceptional durability, low-cost, high-power density, and reliability, cathodes based on titanium dioxide, and more specifically spinel LTO (Li4Ti5O12), present an attractive alternative to conventional lithium cathode materials for multiple applications. The aim of this work is to synthesize and characterize the nanopowders of titanium dioxide ($TiO_2$) and lithium titanate ($Li_4Ti5O_{12}$) by the hydrothermal method and to use them as a cathode in a lithium-ion battery. The structural and morphological characterizations of the synthesized powders were performed by XRD, SEM, EDS, and FTIR-ATR. Nevertheless, the study of the electrochemical performances of the elaborated electrode materials was carried out by: cyclic voltametry (CV) and galvanostatic charge/discharge (CDG). The prepared electrode by the powder annealed at 800 °C has a good specific capacity of about 173 mAh/g and a good cyclic stability

**Keywords :** lithuim-ion, battery, LTO, tio2, capacity
**Conference Title :** ICLBT 2022 : International Conference on Lithium Battery Technology
**Conference Location :** London, United Kingdom
**Conference Dates :** August 16-17, 2022