

Synthesis of lithium titanate using titanium oxide-hydroxide

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One of the greatest challenges for our society is providing powerful electrochemical energy conversion and storage devices. Electrochemical studies of the electrodes of Li-ion batteries clearly reveal the advantage of nanoarchitectural design of active materials. Rechargeable lithium-ion batteries are the most promising candidates in terms of energy and power density. Li-ion battery applications are energy storages, E-Bus, electric vehicles (EVs) and hybrid electric vehicles (HEVs). Lithium titanate materials allow for high-performance Li-ion batteries that are available as large-scale storage devices for applications such as automotive and stationary energy storage. Lithium titanate is a interesting candidate in anodes for solid-state and liquid-type lithium-ion batteries. Among the candidates, lithium titanate has showed promising electrochemical properties with structural and chemical stabilities to the electrolyte. In this study, lithium titanate was obtained through reaction of titanium oxide-hydroxide and lithium hydroxide. The crystallographic structure of the material was identified by X-ray diffraction and characterized using scanning electron microscopy.