Preparation and Characterization of Graphite Anod efor Lithium Ion Batteries

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The lithium-ion batteries are energy storage systems of high performance and low cost for use in multiple portable devices. These require the use of increasingly smaller and lighter batteries with high energy and power density, fast charging and long service life. Moreover, these systems are promising for use in electric or hybrid vehicles. However, the successful use of the lithium in the field, requires improvements in relation to the properties of electrode materials, such as cost, energy density, cycle life, safety, and environmental compatibility. Currently, investigations are looking to improve the cell configuration by careful selection of the materials and components electrolytic[1]. These batteries use carbon as anode material, usually synthetic graphite, because of its high coulombic efficiency and acceptable specific capacity for the formation of intercalation compounds (LiC6) [2]. Their low voltage increases the potential difference between the electrodes and therefore the energy density of the battery [3, 4]. In this paper, we present the methodology used to prepare and characterize the reversible and irreversible capacity and cyclic stability of graphite materials as anodes in lithium-ion batteries of commercial carbon (CR 1296) and Sungite carbon. We discuss the results obtained using electrochemical techniques for charging and discharging at different current densities, cyclic voltammetry and electrochemical impedance spectroscopy (EIS). Some of these results are presented in Figures 1 and 2.

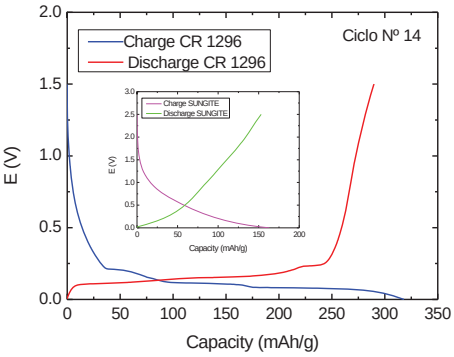

Figure 1. *Charge - discharge curves*

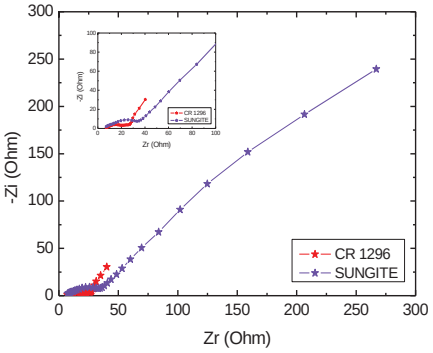

Figure 2. *Nysquist`s diagrams at 50% SOC.*

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