Supercapacitor behaviour of nanosized α-$LiFeO_2$ in neutral sulphate electrolytes

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Nanometric size seems to be a key parameter for fast rate lithium ion and electrochemical capacitors. In a earlier work[1], we reported the electrochemical properties of a nanosized form of lithium ferrite, prepared by a simple and cost−saving method. Nanosized α–$LiFeO_2$ provided an interesting capacity of 160 $mAh \cdot g^{-1}$ under C/4. In the present communication, we have extended its use to electrochemical supercapacitors using neutral sulphate electrolytes in order to build enviromentally friendly devices[2]. The results obtained indicate that the nanomaterial performs quite well as an capacitor electrode when a 0.5M Li_2SO_4 aqueous solution is used as electrolyte.

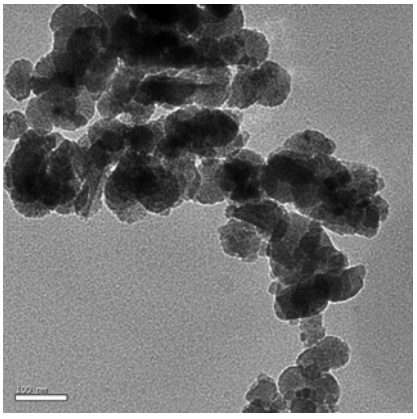

Figure 1. HRTEM image of nanosized α-$LiFeO_2$. aymmetric White bar corresponds to 100 nm.

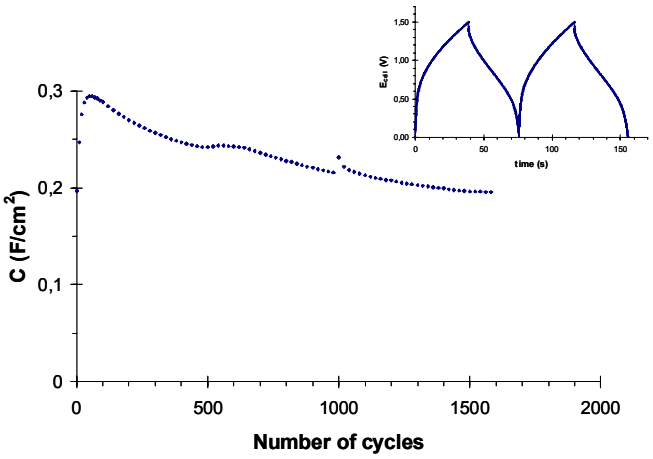

Figure 2. Capacitance of the cell α-$LiFeO_2$/0.5M Li_2SO_4/MnO_2 as a function of cycle number. Voltage range:0-1.5V, $j = 5$ $mA \cdot cm^{-2}$. Inset corresponds to the first two voltage/time profiles.

[1] Morales, J.; Santos-Peña, J. *Electrochem. Comm.,* **2007***, 9,* 2116.
[2] Cottineau, T.; Toupin, M.; Delahaye, T.; Brousse, T.; Bélanger, D. *Appl. Phys. A,* **2006**,*82,* 599.