SATT GRAND CENTRE | TECHNOLOGY TRANSFER COMPANY

MATERIAL

NEW ADVANCED SUBFLUORATED CARBONE (CFX) FOR ADVANCED LITHIUM CARBON MONOFLUORATED (LI-CFX)

#KEYWORDS

lithium battery
CFx nanofiber

MARKET TARGETED

All the actual Li/CFx applications:

- Standard button cells
- Medical market
- Military and space market
- Oil drilling market

within the perspective to widen to medium range current applications (smart meter) thanks to power improvement compare to standard CFx.

TECHNOLOGY

The technology was developed during the last 10 years in the ICCF laboratory and led to the release of 2 patents. The materials are advanced nanofiber fluorinated carbon (CFx) within a stoichiometry inferior to 1. The specific method developed by the laboratory presents the advantage to segregate a CFx phase and a pur carbon phase that contribute to improve the performances in term of power, capacity and initial so called « delay effect ». The management of the fluorination allows a large range of CFx from CF0.2 to CF1 depending on the application targeted.

MAIN ADVANTAGES

• High capacity recovery compare to theory
• Possibility to define the right amount of fluorination depending on the application targeted
• No initial voltage drop that could increase cold discharge
• No need of carbon additive that lead to increase the overall cell capacity
• Higher power performances leading to improve the well-known heating cell phenomena during discharge.
• Already under evaluation by the world's leading designer and manufacturer of advanced-technology batteries for industry

MATURITY & TRANSFER

Materials tested in button along industrial cell design by our industrial partner

Scale up to be performed by the futur manufacturer

Licensing to a CFx manufacturer

Possibility to transfer the know-how for the manufacturing process

RESEARCHERS

- ICCF (Chemical Institute of Clermont-Ferrand), University Blaise Pascal of Clermont-Ferrand

ABOUT US

is a French tech transfer company having exclusive rights to license out technologies coming out of universities and public research organizations in France.

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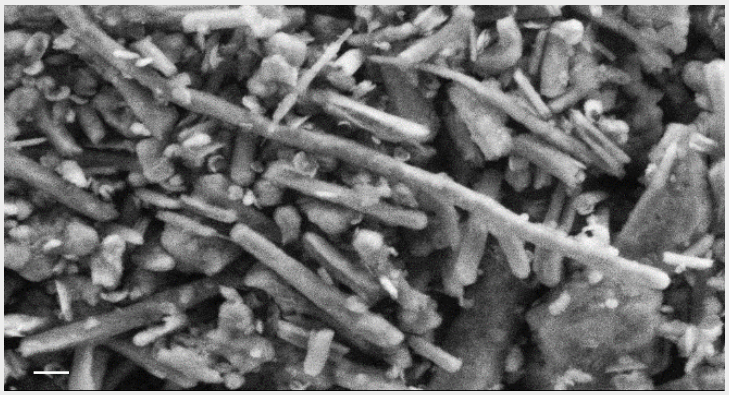
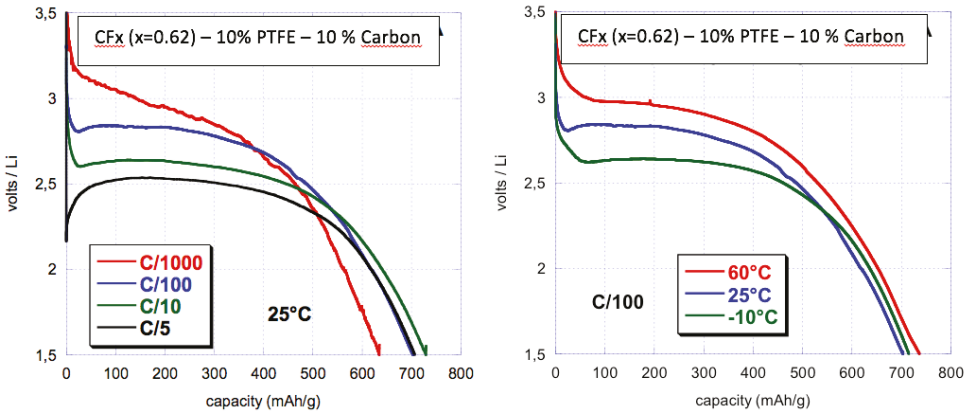
PHYSICAL CHARACTERIZATION



200 nm

ELECTROCHEMICAL CHARACTERIZATION



For high C/10 rate, the capacity recovery is closed to 100%. The initial voltage drop, which is the major drawback for Li/CFx cells, disappears with these advanced new CFx materials.

- Particle size : [50 ; 200] nm
- Fluoration level (CFx) : 0.2<x<1
- Voltage drop : Proportional to the fluorinition level. Superior to 2.6V for x=0.76
- Capacity in mAh/g : Proportional to the fluoration level until C/5

INTELLECTUAL PROPERTY

The technology is protected by 2 worldwide patent

PATENT #1
FR12/61927 (Priority : 12/12/2012 ; PCT : Russia, Korea, China, USA, Canada, Japan, EU)

PATENT #2
FR15/59378 (Priority : 10/02/2012 ; PCT : Russia, Korea, China, USA, Canada, Japan, EU)

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