

Graphene based supercapacitors: when materials and fabrication methods drive innovation

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Abstract

This contribution deal with the results recently obtained on supercapacitors with electrodes fabricated using mixtures of graphene based nanomaterials. The electrode fabrication has been performed using a new dynamic spray-gun based deposition process set-up at Thales Research and Technology (patented). This technique constitutes a real breakthrough because electrodes can be deposited over large areas in a completely automated way, using different kinds of substrates and with a thickness between some nms and up to hundredths of μms . Our innovation is composed by three parts: the development of the deposition technique, the development of electrolytes (ionic liquid) able to stand between -50°C and 105°C (avionics specifications) and the ability to nanostructured the materials using two different nozzles. In this talk we will also introduce our industrial strategy developed in the frame of Graphene Flagship to implement our innovation. Indeed we have identified all the necessary chains that will allow us achieving the fabrication of this kind of devices in three years from now.

References

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- [2] Non-faradic carbon nanotubes based supercapacitors : state of the art, P.Bondavalli, D.Pribat, C.Delfaure, P.Legagneux, L.Baron, L.Gorintin, J-P. Schnell, Eur. Phys. J. Appl. Phys. 60,10401, 2012
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Figures

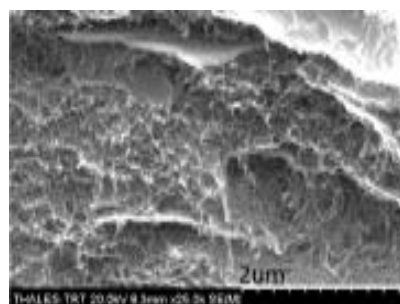


Figure 1: Nanostructured electrodes obtained by spraying

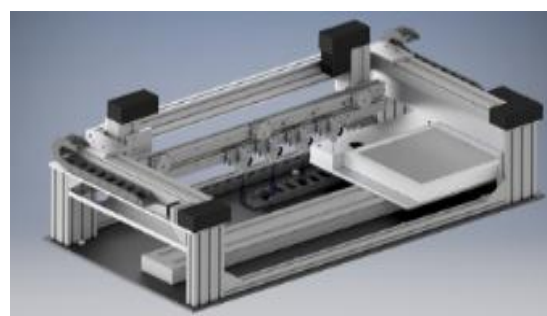


Figure 2: Four nozzles deposition system developed in the frame of Graphene Flagship by M-Solv for Thales.