

# Recent advances on the understanding of ion adsorption/transfer in nanoporous carbon electrodes; application to supercapacitors

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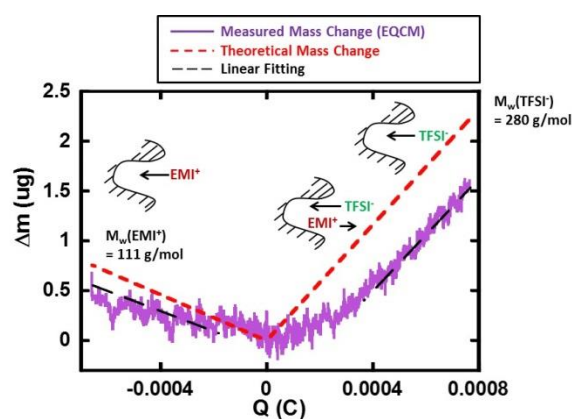
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The research on the design of Ionic Liquids (ILs) electrolytes for supercapacitor applications has seen a tremendous increase during the past few years. Differently from Li-batteries where the electrolyte composition and stability must fit with several requirements (SEI formation, electrochemical kinetics), there is potentially more room for breakthroughs in supercapacitors applications. This talk will firstly present results about the experimental study of the ion confinement effect on the electrochemical characterizations of nanoporous carbons. We will show that ionic liquids can be efficiently used as model electrolytes for pushing further our basic understanding of the electrolyte/carbon interactions in confined pores. In a second part, we will present results showing the successful preparation of free-standing, bulk, nanoporous carbon films with outstanding electrochemical and mechanical properties that can be used for developing high energy density flexible micro-supercapacitors.

## References

- [1] P. Simon and Y. Gogotsi, *Nature Materials*, 7 (2008) 845-854.
- [2] W.-Y. Tsai et al. *JACS* 8722–8728 (2014)
- [3] J. Griffin et al, *Nature Materials*, June 22nd 2015 (doi: 10.1038/nmat4318).

## Figures



**Figure 1.** Change of the electrode mass versus the charge during Electrochemical Quartz Crystal Microbalance measurements; the adsorption of anions and cations of the electrolyte can be tracked.