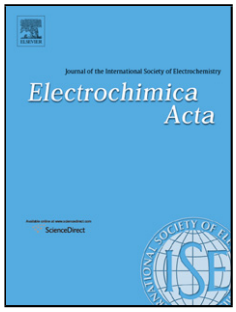
Accepted Manuscript



Title: Understanding the different (dis)charging steps of supercapacitors: influence of potential and solvation

Author: C. Pean B. Rotenberg P. Simon M. Salanne

PII: S0013-4686(16)30381-4
DOI: http://dx.doi.org/doi:10.1016/j.electacta.2016.02.106
Reference: EA 26723

To appear in: *Electrochimica Acta*

Received date: 13-10-2015
Revised date: 15-2-2016
Accepted date: 16-2-2016

Please cite this article as: C. Pean, B. Rotenberg, P. Simon, M. Salanne, Understanding the different (dis)charging steps of supercapacitors: influence of potential and solvation, <![CDATA[Electrochimica Acta]]> (2016), http://dx.doi.org/10.1016/j.electacta.2016.02.106

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Understanding the different (dis)charging steps of supercapacitors : influence of potential and solvation

C. Pean[a,b,c,*], B. Rotenberg[a,c], P. Simon[b,c], M. Salanne[a,c,d]

[a] *Sorbonne Universités, UPMC Université Paris 06, UMR 8234, PHENIX, F-75005 Paris, France*
[b] *CIRIMAT, UMR CNRS 5085, Université Paul Sabatier, F-31062 Toulouse, France*
[c] *Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, 80039 Amiens Cedex, France*
[d] *Maison de la Simulation, USR 3441, CEA - CNRS - INRIA - Université Paris Sud - Université de Versailles, F-91191 Gif-sur-Yvette, France*

Abstract

Supercapacitors are an innovative and promising technology in the field of energy storage. In the present study, we use modeling via computer simulation as a technique to study the dynamic processes of charging and discharging. This methodology is complementary to experiments. Various model systems composed of different structures of carbon electrodes, in contact with either pure or solvated ionic liquid, polarized at positive or negative potentials were investigated. From the data obtained, we identify several characteristic times for the charging mechanism of supercapacitors. Furthermore, we determine the influence of the structure of the electrode material, and the effects of potential and solvation on dynamical processes.

Keywords: supercapacitors, dynamic processes, molecular dynamics,

∗. Corresponding author : clarisse.pean@gmail.com

Accepted Manuscript

Download English Version:

https://daneshyari.com/en/article/6607469

Download Persian Version:

https://daneshyari.com/article/6607469

Daneshyari.com