



The Electrochemical Society – Detroit Section

Seminar Notice: Thursday, Feb 12, 2009

On electrochemistry of activated carbon electrodes, EDL (super) capacitors and separation processes

Doron Aurbach, Professor

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This talk will describe the ongoing efforts to develop and study activated carbon electrodes for EDL (super) capacitors and separation processes, including water desalination by the capacitive de-ionization method (CDI). The development of molecular sieve carbon electrodes, starting from carbonization of selected polymers (e.g. poly-cellulose) following activation by mild burn-off processes (e.g. with CO₂ at elevated temperatures) will be described. A controlled activation can allow design of required average pores size of activated carbons. The corrected average pores size of these activated carbons could be estimated by the study of adsorption processes from the gas phase and capacitive electrochemical processes. In turn, it was possible to assess sizes of different types of ions, thus using these activated carbons as rulers for various molecular/ionic sizes of adsorbed species. The ion sieving behavior of carbon electrodes affects very interestingly their electrical conductivity: a parabolic behavior of the electrical conductivity vs. potential around the PZC is measured. Several interesting phenomena related to non-aqueous super capacitors will be described, e.g., the effect of the fine structure of the activated carbon electrodes on the kinetics and stability of the capacitive processes and peculiar partial charge tapping phenomena. The possibility of water desalination by CDI processes will be discussed as well.

Bio: **Dr. Doron Aurbach** is a full Professor in the Department of Chemistry and a senate member in BIU since 1996. He chaired the chemistry department during 2001-2005. He is an associate editor of two journals: Electrochemical and Solid State Letter and the Journal of Solid State electrochemistry. He founded the electrochemistry group at BIU at the end of 1985. The group includes 30 researchers and works in the following fields: Li ion batteries, rechargeable magnesium batteries, electronically conducting polymers, super capacitors, engineering of new carbonaceous materials, sensors and water desalination. D. Aurbach published more than 310 journals papers, a book, 12 chapters in books and 12 patents. 23 scholars received PhD and 28 scholars received MSc degrees under his supervision. He received the 2005 technology award of the battery division of the Electrochemical Society, the 2007 research award of the Israel Vacuum Society and became an ECS fellow during 2008

Date: Thursday, Feb 12, 2009

Location: Lawrence Technological University

21000 West Ten Mile Road, Southfield, MI 48075

Building #5 (Taubman Welcome Center), 4th Floor, Room 406

Use Parking Lot A, C or D (Lots C & D are accessed off NW Highway)

Time: 5:30 pm Reception / 6:30 pm Dinner / 7:30 pm Speaker

Price: \$20 Members / \$22 Guests / \$15 Students

Payment: Cash or Check

RSVP by: Thursday, Feb 5th, 2009 to Xia Wang

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<http://www.electrochem.org/ecs/sections/detr/detr.htm>



