



The Electrochemical Society
Seminar Notice: Thursday, September 30th, 2010

Stress Analysis of a Polymeric Separator in a Lithium-ion Battery

Xinran (Sharon) Xiao, Ph.D.

*Associate Professor, Dept. Mechanical Engineering
Michigan State University
East Lansing, MI*

Rechargeable Li-ion batteries present some interesting mechanics problems. The Li⁺ diffusion induced stresses inside an electrode particle has been the focus of some recent investigations. In a battery cell, the stress and deformation due to Li⁺ insertion/removal may affect other components as well. One of the concerns is the polymeric separator. To reveal the stress in the separator, a finite element based multi-scale model for a Li-ion battery cell is developed. The model considers battery kinetics, diffusion, thermal, and stress. The simulation shows the simultaneous deformation of the two electrodes and reveals the variation of the stress in the separator with the battery cycle.

Xinran Xiao is an Associate Professor of Mechanical Engineering at Michigan State University since 2008. She worked at General Motors Engineering Division (1999-2001), General Motors R&D center (2002-2008), Warren, MI; Concordia University, Montreal Canada (1992-1999, 1988-1991), and Industrial Materials Institute of National Research Council Canada (1991). She received her B.Eng. (1982) and M.S. (1985) from Beijing University of Aeronautics and Astronautics and her Ph.D from Free University of Brussels (VUB) in 1987.

Date: Thursday, September 30th, 2010

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 / \$10 Students

Payment: Cash or Check

RSVP by: Monday, September 20 2010 to Dr. Kimber Stamm

kimber.stamm_at_tema.toyota.com

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



