Bimetallic Cathode Materials for Lithium Based Batteries

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Frontiers in Materials Science
Seminar Series

Presented by…

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Abstract

Batteries for implantable cardiac defibrillators (ICDs) are based on the Lithium/Silver vanadium oxide (SVO, Ag2V4O11) system. This system was first implanted in 1987 and over 20 years later remains the dominant system used in human implants. Hundreds of thousands of lives have been saved due to ICDs powered by Li/SVO batteries. A case study highlighting the rich chemistry and electrochemistry of the Li/SVO system providing battery characteristics favorable to the ICD application will be discussed including strategies critical to successful commercialization.

We are currently investigating next generation materials with a general composition of MM'POx for possible application in biomedical batteries. Specifically, the first material under study is Ag2VO2PO4. Changes in the composition and structure of Ag2VO2PO4 with reduction, especially the formation of silver nanoparticles, are detailed to rationalize a 15,000 fold increase in conductivity with initial discharge, which can be related to the favorable battery characteristics associated with Ag2VO2PO4 cathodes.

Website/Bio Information:

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More info?

See http://materials.pnl.gov

Thursday, June 9

EMSL Auditorium

3:45 – 4:45 pm