Andrew N. Jansen

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Professional Experience

- **1993-Present**. Chemical Engineer at Argonne National Laboratory
  - Applied a variety of electrochemical and chemical techniques to a wide range of lithium and lithium-ion battery chemistries for transportation applications
  - Acquired extensive hands-on experience in various equipment needed for a successful lithium battery research facility such as glove box systems, power supplies/cyclers, data acquisition hardware, analytical instruments, and experimental test fixtures
  - 2008-Present. Lithium-ion battery R&D for plug-in hybrid electric vehicles (PHEV) - Applied Battery Research for Transportation Program for the Department of Energy-Energy Efficiency and Renewable Energy (DOE-EERE)
    - Developed improved methods of making intermetallic electrodes for use in PHEVs
    - Developed capability of fabricating large format lithium-ion prototype cells for use in PHEVs, enabling a more rigorous and timely evaluation of the many promising battery materials being developed at Argonne
  - **1999-2008**. Lithium-ion Battery R&D for Hybrid Electric Vehicles - Advanced Technology Development Program for DOE-EERE
    - Explored the cause of the severe power loss experienced by lithium-ion batteries at low temperature (below 0°C)
    - Determined that power loss is not significantly dependent on choice of active materials, electrolytes, and electrode formulations, but predominantly due to lithium-ion kinetics at the electrode-electrolyte interface
    - Investigated the use of flexible packaging alternatives for hybrid electric vehicle batteries
    - Established appropriate accelerated aging and abuse protocols to evaluate packaging hardware in an aggressive electrolyte environment
    - Evaluated the performance of many lithium-ion technologies based on metal oxides and metal alloys as anode materials and metal oxide cathodes in a variety of electrolyte compositions

    - **1995-1999**. Lithium Polymer Battery R&D for Electric Vehicles - U.S. Advanced Battery Consortium (USABC) Program for DOE-EERE
        - Evaluated the electrochemical performance of lithium polymer cells as a function of operating conditions and starting materials for use in an electric vehicle
    - **1995-1997**. Nickel Metal Hydride Battery R&D for Military - Army Research Office-Illinois Institute of Technology Research HUB
        - Investigated the influence of metal additives in nickel/metal hydrides on crystal structure and cell performance using *in-situ* neutron diffraction and electrochemical cycling
    - **1993-1995**. Lithium Iron Disulfide Battery R&D for Electric Vehicles - USABC Program for DOE-EERE
        - Evaluated performance of LiAl/FeS2 molten salt cells as a function of chemical additives and operating conditions for use in an electric vehicle
- **1986-1987**. Undergraduate Chemical Engineer Research Aide, Forest Products Laboratory; Madison, Wisconsin
    - Researched influence of recycled polymer fibers in wood composites on mechanical properties as a function of processing, concentration, and temperature
- **1983-1986**. Summer Student Help, Wausau Paper Mills; Brokaw, Wisconsin
    - Maintained, repaired, and installed various process control instrumentation
    - Production line worker on several steps of paper making process

Education

- PhD, Chemical Engineering, University of Florida, 1992
- MS, Chemical Engineering, University of Virginia, 1989
- BS, Chemical Engineering, University of Wisconsin-Madison, 1987

Awards

- Quality and Safety Recognition Award (2006 and 2008)
- Air Products External Collaboration Award (2006)
- University of Virginia Fellowship (1988)
- Dow Chemical Outstanding Junior Chemical Engineer Award (1985)

Professional Society Affiliations

- Active member of the Electrochemical Society

Publications & Patents

- 32 peer-reviewed publications
- 4 patents, patent applications & inventions